

# COMPUTERWORLD

## Chaos, then freedom

Shift from proprietary systems isn't smooth



BY JOHANNA AMBROSIO  
and J. A. SAVAGE  
CW STAFF

First in a three-part series.

The walls of division will fall and chaos will reign for a time, but ultimately, freedom of choice will come to all. That is not a description of what has occurred in Eastern Europe, but rather what many observers said will occur on the road to open systems.

With customers demanding computers that no longer lock them into one supplier, competing vendors and industry consortia said they are trying to meet that need by bringing out different products that incorporate, to varying degrees, some generally agreed-upon standards such as Posix.

However, there is nothing available today that is considered completely "open," observers said. Instead, even products that are written to the same basic set of specifications can have massive incompatibilities — witness the many variations of Unix and the problems users have in getting them all to communicate.

"Openness is a continuum," said Al Hankinson, chief of the systems and software technology division in the computer systems laboratory at the National Institute of Standards and Technology. *Continued on page 123*

## Wang opts for reseller role

BY SALLY CUSACK  
CW STAFF

LOWELL, Mass. — Customers of Wang Laboratories, Inc. were caught off guard and left anxiously awaiting further details after the company's announcement last week that it will provide a conversion path from its VS minicomputer line to IBM's Application System/400.

IBM will invest \$25 million in this cash-strapped competitor as part of an agreement in which IBM will resell the AS/400 midrange system under the IBM label and IBM's RISC System/6000 and Personal System/2 products under its own label. The companies and they will jointly develop conversion centers that will assist VS users in migrating to the AS/400.

Most VS users contacted last week expressed little or no interest in migrating to AS/400 technology, but several customers



JOURNAL WANG LABORATORIES, INC. CW Chart: Dennis M. Johnson

applauded the choice of the platform.

VS customers will have the opportunity to migrate to AS/400 platforms via soon-to-be-established conversion centers.

Richard Miller, president and chief executive officer of Wang, reiterated Wang's commitment to delivering the next-generation VS

Crawford said his interpretation of Wang's action "is that they are not going to be in the hardware business for the long term."

Richard Miller, president and chief executive officer of Wang, reiterated Wang's commitment to delivering the next-generation VS

platform.

VS customers will have the opportunity to migrate to AS/400 platforms via soon-to-be-established conversion centers.

*Continued on page 8*

## DEC costs swamping sales

BY MARYFRAN JOHNSON  
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. is fighting drag-on in every front these days as it prepares to lay off thousands more employees while managing the daunting transition to a new computer architecture.

The company is feeling heat from industry moves toward commodity hardware platforms and open systems, along with

shrinking user budgets and stalled capital spending for high-end systems. A competitive gap between its current product line and better midrange price/performers from IBM and Hewlett-Packard Co. are other challenges to overcome.

In an interview with Computerworld last week, Jack Smith, DEC's senior vice president of operations, confirmed that the firm may have to lay off as many as 8,000 more employees over

*Continued on page 4*

## IBM stung by market shifts

BY ROSEMARY HAMILTON  
CW STAFF

IBM's disclosure last week that it is unlikely to achieve any revenue growth this year shows how

damaging product transitions can be during a weak economy, according to analysts.

Some industry observers also suggested that the computer giant's financial woes may reflect a far more serious and longer term problem that all hardware manufacturers now face. With customer demand shifting toward smaller and less expensive platforms, computer manufacturers are struggling to maintain high margins from proprietary large systems.

### MINI-RISC

► Hewlett-Packard to raise minicomputer stakes with overhauls of RISC-based HP 3000 and 9000 lines. Page 4.

## Lotus Notes to aid Officevision LAN?

BY PATRICIA KEEFE  
CW STAFF

IBM was attempting late last week to finalize an agreement to incorporate Lotus Development Corp.'s Notes work-group application into the much delayed

IBM Officevision LAN 2.0 release, according to sources close to both companies.

With an update on Officevision 2.0 and OS/2 slated for today, the sources said that discussion between the two companies had bogged down over whether IBM would merely use technological elements of Notes or sell the product and then provide it with added prestige as Lotus attempts to create a broad marketing for its work-group concept.

IBM would like to put pieces of Notes under Officevision without making wholesale changes to the Officevision interface, said

Frank Dubcek, president of Communications Network Architects, Inc. in Washington, D.C. "Officevision doesn't have a very good work-group automation product, which is one of the things that NCR Corp. has with Cooperation," Dubcek said.

IBM, on the other hand, is after specific pieces of technology, including Notes' database engine, asynchronous terminal support with network security and a graphical front end to the Notes client, according to a source close to IBM.

If IBM agrees to resell Notes,

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**Legion of Doom hackers** go commercial, offering to educate corporations on keeping hackers out. Page 124.

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## Quotable

"**T**here are very few things that are either completely open or totally closed. The majority of the things are in-between."

AL HANKINSON  
NATIONAL INSTITUTE OF STANDARDS

On the state of open systems.  
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## The 5th Wave



## EXECUTIVE BRIEFING

■ IBM's \$25 million in aid to troubled Wang turns Wang into both a software developer and an IBM AS/400 and RS/6000 reseller and stuns Wang users, who nervously await migration details. Meanwhile, analysts speculate that Wang's imaging technology could help clear IBM's clouded Officevision strategy. Page 1.

■ Notebook computers are hot, all right! Analysts predict that 912,000 units will be sold in 1992, compared with 610,000 this year. But next year's notebook user will still have to contend with a three- to four-hour battery life, 2,400 bit/sec. internal modems and awkward file transmission back to the home office — all for twice the price of a desktop machine. Page 83.

■ When experienced IS professionals calculate the cost of installing new PCs, they don't stop at the price of the machines. There is more: PC installation includes everything from peripherals to furniture to training. Page 116.

■ Users clamor for open systems, and the result of vendors' rush to supply them is a chaotic landscape in which 'open' is a relative term. Page 1.

■ Open systems is critical to Du Pont's growth strategy, IS head Raymond E. Cairns Jr. says. That is why the \$40 billion chemicals giant is relying on a small, select group — the Open Systems Program Office — to guide it from its DEC- and IBM-based present into an open future. Page 75.

■ An already confused networking market grows murkier still, as Microsoft chairman Bill Gates warns his top managers that funding for the LAN Manager network operating system will be cut — a move that could send users shopping for competitors' wares. Page 6.

■ IBM is headed for another sorry quarter, it says, writing off plummeting earnings and flat revenue (possibly for the rest of the year) as the high cost of a product transition during a weak economy. Page 1.

■ Technical recruiting networks made up of managers who share resumes and information about candidates are slashing costs and aiding companies that are helping laid-off workers find jobs. Page 109.

■ The computer industry isn't always driven by profits. Sometimes, its motives are more humanitarian. Profiles of 10 Computerworld Smithsonian Award finalists, companies whose applications have had a positive impact on society, reveal this kinder, gentler side. Page 97.

■ IBM's latest networking moves underwhelm analysts, who find the firm short on ship-date commitment and product scope. Some say the most promising products are now too pricey for comfort. Page 125.

■ With the competition mounting on all sides, DEC plans to work through a tough product transition by slashing expenses and prices. Industry observers remain wary; price cuts and layoffs alone won't shelter DEC from the PC/open systems onslaught, they say. Page 1.

■ On site this week: No more scrabbling through files or scrabbling through the halls for the Merrill Lynch accounting staff. Aided by 4GL software, more than 600 users at the Wall Street firm can plumb a general ledger database on-line. Page 31. CSX Technology IS Chief Arthur Masson tracks some 150,000 train cars across 21 transportation centers, courtesy of a Macintosh-to-VAX client/server network. Page 47. The U.S. Federal Court system is about to link up via a Unix-based network collection that could end up being one of the world's largest. Featuring IBM as general contractor, the project will give some 26,000 judicial personnel access to one another. Page 59.

# Presenting The Most Advanced, Integrated And Automated Production Control In The World.

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**COMPUTER  
ASSOCIATES**

# HP to heat up multiuser systems market

BY J. A. SWANSON  
CW STAFF

**PALO ALTO, Calif.** — Hewlett-Packard Co. is expected to announce 15 multiuser systems today that early users said will command a price/performance advantage over systems from Digital Equipment Corp. and other competitors.

The new machines overlap with the existing entry-level and midrange HP processor lines, proving what HP claims is more speed at lower cost. New models in the HP 3000 and 9000 lines use reduced instruction set computing (RISC) chip technology that was first introduced on its workstations in March. The chips reportedly deliver up to 76 million instructions per second (MIPS). The company declined to divulge MIPS ratings for the new machines, however.

"The price/performance got me," said James Fitchell, director of information services at Harvard Medical School in Bos-

ton. Fitchell said he will migrate applications off of his two HP 3000 proprietary operating systems computers onto one of the new Unix-based HP 9000 models. Although retaining a DEC Microvax 3300, he said he has no plans to upgrade that system.

"DEC is fighting this war with words; HP is fighting the war with iron," said Michael Gosswein, an analyst at Open Systems Advisors, Inc. in Boston. He added that DEC has announced a "good strategy, but when it comes to building and delivering high-performance, attractively priced systems, HP is first."

Andy McKenna, senior vice president of information services at Home Depot, Inc. in Atlanta, said the price/performance lured his company into evaluating HP's Unix-based

computers as possible replacements for Data General Corp.'s minicomputers in its 150 stores, as well as for new systems in another 250 stores expected in the

chines, according to McKenna. He is receiving two more machines for further evaluation.

Pricing starts at \$12,895 for the HP 9000 Model 807 with 15 transactors/loc., a 100-MHz Unix system. The most expensive model is the \$170,000 HP 3000 Series 967, with the company's proprietary operating system. That machine is rated for 600 users and more than 50 transaction/sec.

Migration from HP's earlier RISC computers requires a box swap, according to Bernard Guidon, general manager for HP's commercial Unix systems. He said the company will provide the new machine in the field. With the new machines, there is an entry-level box and a midlevel box. Between the two, a customer can keep memory and other boards and slide them into the larger box with increased power.

The Unix-based systems are slated to ship in August and September. Proprietary systems delivery is scheduled for October.

## Coming attractions

To reverse its minicomputer slump, Hewlett-Packard Co. is introducing six RISC-based HP 9000 systems with new chip technology

15 to 44 trans/sec.
96 to 512
64M to 16M bytes
64M to 192M bytes
\$12,900 to \$95,000
August

CW Chart: DOWNEY, S. JOHNSON

next five years.

The software, developed in-house, has run on the new ma-

chines, according to McKenna.

Potential customers for the mainframe VAX 9000 seem to be eyeing the high-end VAX 6000s — recently cut in price by 18% to 37% — as possible substitutes. "Overall, the pricing doesn't make any sense," said William Anderson, chief information officer at Prudential Securities, Inc. in New York. "It looks like two [VAX 6000 Model 560] would run 15 simultaneous jobs as quickly for us as 9000."

Some industry observers said they believe DEC will emerge in leadership form once the recession wanes and capital spending budgets fatten up again.

"DEC is doing more of the right things now," said Barry F. Wallman, a senior research analyst at Sanford C. Bernstein &

& Sons, Inc. in Baltimore.

"DEC is changing, but will that be enough to reverse the trend toward Unix? I doubt it," said David We, an analyst at S. G. Warburg & Co. in New York. "I don't think DEC is coming back the way it did in the mid-1980s, but things will get better as the Alpha VAX gets implemented."

## Looking toward a busy future

**D**EC will not stand idly while its engineers put the final flourishes on Project Alpha — the next-generation VAX with a reduced instruction set computing (RISC) heart and 10 times the price/performance of today's models.

What customers can expect to see during the next several months are VAXs that double or triple in performance as intense competitive pressure from IBM and Hewlett-Packard Co. drives VAX prices continually downward.

DEC officials have confirmed that there will be another generation of VAX 6000s, the Model 600s, which industry analysts said they expect to be out this fall. A midsize kicker for the midrange VAX 9000 is also in the cards, along with faster models of every other VAX model in the product line.

"Before the end of this year, DEC will put out an enhanced VAX 9000 offering 25% better performance than the existing line, and they'll

be priced aggressively," said Terry Shannon, an analyst at International Data Corp. in Framingham, Mass.

DEC will double the VAX 6000's price/performance with a fourth-generation CMOS chip set, Shannon said.

The VAX 4000 is reportedly selling briskly these days, but its current price tag puts it at a 20% to 35% price disadvantage against comparable IBM Application System/400s, according to a study by Technology Investment Strategies Corp. in Framingham, Mass.

Although the midrange VAX 9000 fell far short of DEC's hopes in fiscal 1991, the company did ship at least 325 systems in the product's first year, said William Atkins, sales manager for the VAX 9000. Atkins said he is counting on at least 100 mainframes to be shipped this quarter. "That is much higher than we expected," he said.

MARYPRAN JOHNSON

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## NEWS SHORTS

### DEC to add to CASE lineup

Digital Equipment Corp. will pack more tools into its Cobalt line of development and configuration (CASE) software this month, including the CDD/Repository for Unix's OSF's Unix variant. The data store is reportedly available for only \$19.95/VMs, allows users to manage and integrate a variety of tools for building applications. Analysts said DEC will announce new project management capabilities with Decplus Version 1.0 and a number of third-party relationships.

### Westinghouse to sell DEC gear

The advanced product division of Westinghouse, a business unit of Westinghouse Electric Corp., has signed up as a national distributor of DEC personal computers, workstations, networking and PC integration products and services. The move expands DEC's PC sales business into a new market, offering customers in the electrical industry "one-stop shopping" for computer-integrated energy management products and industrial plant floor data projects, DEC officials said.

### Timeplex adds switched service

Timeplex, Inc. has become the first customer for Software Defined Data Network (SDDN) 384, the switched, high-bandwidth service AT&T announced last year. SDDN allows a customer with a private network to dial up a circuit over an AT&T Integrated Services Digital Network Primary Rate Interface and allocate bandwidth to a variety of AT&T services. Timeplex is currently using the switched 384k/b/sec. service for an on-demand videoconferencing link.

### Panosphic, Realsis to merge

Panosphic Systems, Inc., and privately held Realsis, Inc., have announced a letter of intent to merge. Panosphic, which offers a broad variety of software products, recently said it planned to "serve" its customers' evolving needs in cooperative and workstation-based applications development. Realsis is a supplier of workstation software. The merger would provide Panosphic with a "key component" in its cooperative processing strategy. Realsis would gain access to Panosphic's broad international distribution and support network.

### Vice chairman named at IDG

Robert A. Farmer was chosen last week as vice chairman of International Data Group, succeeding And Leibow, who recently became chairman of the IBM Information Systems, Inc. Farmar is currently vice chairman of the Washington, D.C.-based government relations firm Crowley and Associates, a former member of the Democratic National Committee and the Democratic Governors Association. IDG, parent company of International Data Corp. and World Expo Corp., operates more than 150 concerns.

### DEC, AST sign pact

AST Research, Inc. announced last week it had signed an agreement with DEC that represents a sales potential of \$100 million for AST. Under the agreement, DEC can select current and future AST Bravo PCs and Premium servers to fulfill contracts for government and commercial accounts. DEC has already chosen AST's Premium 486 servers as part of a \$140 million PC integration contract with the U.S. Navy.

### Call blocking clears committees

U.S. House and Senate panels unanimously passed separate bills last week to require telephone companies to allow callers to prevent their telephone numbers from being revealed to the parties they are calling by calls identification blocking. The bills require carriers to offer the feature, called call blocking, free of charge on a call-by-call basis. A number of businesses now use caller ID services to identify customers calling their 800 numbers and to allow the service representative taking the call to automatically call up a customer's electronic file.

*More news shorts on page 124*

## Memo raises doubt on LAN Manager

BY JIM NASH  
CW STAFF

An electronic memo from Microsoft Corp. Chief Executive Officer Bill Gates to his managers has cast new doubt on a section of the networking market that is already murky with uncertainty.

A May memo to strategic issues, last week, indicated that Microsoft will throttle back its marketing for its LAN Manager network operating system. For some network managers, significant budget cutbacks for LAN Manager could be the deciding factor in opting for competitors' software.

Gates addressed several topics in the wide-ranging memo (see story at right), but it is the networking reference that may have the greatest impact on information systems managers.

"We know it wasn't going to be easy, but it has been even harder than we expected to build a position in networking," Gates wrote. "You will see us backing off on some of the spending level, but don't doubt that we are totally committed to the business."

David Thatcher, Microsoft's product manager for LAN Manager, said last week that the company has scaled back the infrastructure to sell and support its networking software. "We have spent a huge amount on LAN Man," Thatcher said. It can continue to grow without it much money, while retaining Microsoft's "complete commitment."

For some, the memo was a non-event. "I'm not concerned at all" that Microsoft will substantially pull back from LAN Manager, said Gary Cunningham, a leader in the 3Com Corp. 3Win network engineer group. Gates, who spoke to a group of

3Wards recently, "left me with a completely different impression," Cunningham said.

He said he sees no negative impact from a leveling off of funding, given the burst Microsoft gave LAN Manager during this past fiscal year.

No one contacted last week could guess how much Microsoft would reduce its LAN Manager spending. Thatcher said budgets are still being finalized and will not be made public.

Since last August, Microsoft

has made a show of its commitment to LAN Manager, spot-lighting, for example, its plan to hire 500 new employees for network development and marketing teams. Industry analysts and resellers have estimated Microsoft's investment in the LAN Manager program at \$60 million to \$90 million so far.

"This could mean serious problems," said Todd Booth, network manager at Quotron Systems, Inc., a maker of financial software. "With what [Gates] has spent so far, he hasn't caught the market."

According to Gates' memo, Microsoft's strategy is to build networking features and services into operating systems releases, relying on its Windows product as a strength.

## Gates' words of caution

Microsoft Corp. Chairman Bill Gates last month sketched out for his senior staff a broad array of strategic challenges ahead and potential to avoid.

"Our major concern ... IBM attacking us in systems software, Novell defeating us in networking and ... competitors getting their Windows act together is not a scenario but a reality," Gates wrote in the memo, copies of which were provided by the company last week following disclosure of its existence.

Among other issues, Gates addressed were the following:

The company's relationship with IBM. "IBM is proposing to take over the definition of PC desktop operating systems ... . The machines to their success are not only technical but structural. Why are they willing to lose so much money on systems software? The answer is that they have a plan to design the operat-

ing system so that their hardware [Micro Channel Architecture] and applications are tied to ... Eventually, we need to have at least a neutral relationship with IBM," Gates said in the memo. "It may be fairly cold."

An Apple Computer, Inc., "lawsuit." "If the judge rules against us without making it clear what we have to change or asks us to eliminate something fundamental to all windowing systems such as overlapping windows, it would be disastrous."

Outside resonances. "We need to have visible events on a regular basis where we solicit the input of anyone who wants to influence our future direction ... " "Unix has [the Open Software Foundation] and X/Open — we also need clear ways for organizations of all types ... to feel like they have something invested in our approach and can affect our course."



**Steve Jobs**  
co-founder  
of *disastrous*

## The next wave rides on NCR's notepad PC

BY MICHAEL FITZGERALD  
CW STAFF

NEW YORK — NCR Corp.'s planned release of its System 3125 stylus-based notepad here today may indeed spark the beginning of a new era of mobile computing, some analysts said. Others said they think the potential of the machines has a long way to go before it gets developed.

"It's kind of like multimedia — a zero billion dollar market," said Dan Ness Jr., microcomputer analyst at Computer Intelligence, a market research firm in La Jolla, Calif. "I love new technology, but as far as I'm concerned, these things just don't hap-

pen overnight," he added.

NCR executives have said they expect the 3125 — a 3.9-pound, Intel Corp. 80386SL-based computer with up to a 4-hour battery life — will be used initially for purposes such as information retrieval and adding day-to-day tasks. The machines will be beta-tested by several resellers, including NCR's own service group, until a general release in August.

NCR, Microsoft Corp. and State Corp. said they envision pen-based computers being used for many tasks. NCR plans to support both Go's Penpoint operating system and Microsoft's PenWindows system.

IBM's declared intention to build a stylus-based notepad in 1992 has also helped generate interest in the pen-based market. One analyst said he expects to see as many as 40 million to 50 million pen-based systems sold annually by the mid-1990s — if they are marketed effectively.

"It's kind of a tough road as a general-purpose computing tool, but if you come at it as an information appliance — like a calculator is — the key thing is that the pen brings an entirely new level of ease of use and intuitiveness to the computer," said Gib Hoxie, head of both Allen & Hamilton, Inc.'s information industry practice in San Francisco.

# Shape of things to come at PC Expo

BY CAROL HILDEBRAND  
AND CHRISTOPHER LINDEQUIST  
CW STAFF

**NEW YORK** — Ashton-Tate Corp. will jump into the client/server market Wednesday, when it is slated to unveil at PC Expo a version of its Dbase IV database designed to work as a front end for Microsoft Corp.'s SQL Server.

The introduction promises to become an important component of Ashton-Tate's cross-platform strategy because it supports both DOS and Unix as database server environments to Dbase IV.

SQL Server is a multithread relational database management system that supports high-volume transaction processing, such as on-line order entry, as well as less demanding decision support applications, such as sales analysis or personal

## Ashton-Tate to offer Unix gear

BY JAMES DALY  
CW STAFF

**TORRANCE, Calif.** — Ashton-Tate Corp. added breadth to its aggressive cross-platform strategy last week with the introduction of a version of the Dbase IV Version 1.1 database management system geared for the low-end Unix market.

Dbase IV for 386 runs on any Intel Corp. 80386 and 486-based microcomputers running one of five desktop Unix systems: The Santa Cruz Operation's (SCO) Unix System V/386 and SCO Xenix 386; AT&T's Unix System V/386; Interactive Systems Corp.'s Unix System V/386; and Everest Systems, Inc.'s Unix System V. Ashton-Tate also shipped a Dbase for Sun Microsystems, Inc.'s Unix-based product line in January.

Although Unix was once regarded as a bleeding-edge operating system aimed at technical users, its ability to multitask and its open environment are beginning to be a potent lure for traditional personal computer environments. "There are only so many PLD's out there," product manager Ken Rieh said. "We see much of the new Unix growth coming at the low end."

### Minimal training needed

Because Dbase IV for 386 has a feel similar to the DOS version's, Dbase IV users will need a minimum amount of training when they move to Unix, Rieh said. Additionally, thousands of existing Dbase applications can be run on the systems with little or no modification to be added.

The Unix version continues the company's push to port the Dbase line to many platforms. Until six months ago, users and developers could take advantage of Dbase IV only on DOS. Today, Dbase IV is available for Apple Computer, Inc. Macintoshes, Digital Equipment Corp. Microvaxes and Sun platforms.

Dbase IV for 386 Unix is available for \$995 with a single-user license. A license for unlimited users on a single computer with a single CPU costs \$1,895. Runtime licenses cost \$295 for a single user and \$995 for a uniprocessor version.

computer-based local-area networks.

With such licenses, SQL Server technology from Sybase, Inc. When Microsoft first announced the product, Ashton-Tate was a participant in the product and was responsible for retail distribution, which it later ceded back to Microsoft.

Another DBMS company, Oracle Corp., will unveil several products for the desktop, including Oracle for 1-2-3 DataLens, an interface allowing data transfer between Oracle Version 6.0 and Lotus Development Corp.'s 1-2-3.

Also at PC Expo, Hewlett-Packard Co. will be demonstrating New Wave for

OS/2 running under IBM Presentation Manager, which will reportedly allow users to migrate from New Wave for DOS to New Wave for OS/2 while maintaining an application's original look and feel.

Ahead of PC Expo's Tuesday kickoff, NCR Corp. will take the podium here to debut a new portable computer. The less than 5-pound machine will reportedly be able to run both Go Corp's Penpoint and Microsoft's PenWindows operating systems.

Another announcement should come from Apple Computer, Inc., which will re-

portedly discuss its Enterprise Systems Division today. Blyth Software, Inc. will take part in the Apple announcement concerning a Data Access Language update that will allow access to multiple databases on host machines, regardless of host, network type or application.

Once the Expo is underway, the Advanced Computing Environment consortium, made up of such hardware as Mips Computer Systems, Inc., Compaq Computer Corp. and Digital Equipment Corp., is slated to announce hardware standards for prospective developers for the reduced instruction set computing-based machines. The CPU is expected to be either Mips' R3000 or its R4000 microprocessor, with a minimum of 8M bytes of memory.

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# Bills could boost manufacturing

BY GARY H. ANTHES  
CW STAFF

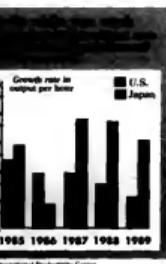
**WASHINGTON, D.C.** — Four U.S. senators introduced a package of bills last week intended to shore up the competitiveness of the U.S. technology industry. The proposed legislation calls for a more coherent federal technology policy, significantly stepped-up federal and private funding in manufacturing research and education and improved monitoring of foreign technology developments.

The bills are sponsored by Ernest Hollings (D-S.C.), Al Gore (D-Tenn.), Sam Nunn (D-Ga.) and Jeff Bingaman (D-N.M.). Democratic chairman of four technology-oriented committees. Anticipating Republican opposition to anything hailing at "industrial policy," Hollings said, "We have written these bills to fit the administration's concept of 'generic, precompetitive technologies,' and I hope the president will support them."

The bills would include the

following aspects:

- Require the White House to put together a five-year plan to strengthen U.S. competitiveness in 22 areas, including information processing and telecommunications.
- Establish regional, industry-specific centers to help small- and medium-size businesses develop advanced manufacturing methods. Industry would put up 40% of the cost, with the balance provided by federal and state governments and universities.
- Set up an industry/government program to develop prototype computer-controlled manufacturing systems and manufacturing communications networks.
- Create an industry-led National Quality Laboratory affiliated with the U.S. Department of



Commerce's Malcolm Baldrige National Quality Award program in which firms would share quality manufacturing techniques.

Establish within the U.S. Department of Commerce a clearinghouse for monitoring foreign technology development.

## Wang

FROM PAGE 1

that will be staffed and operated by Wang personnel, Wang said. A conversational software tool will be developed to aid customers in AS/400 migration.

Despite the stated commitment to the VS, the clear endorsement of the IBM platforms left users anxious and skeptical. In London, Steve Primarolo, president of the 600-member Wang Users Group in the UK, said the key decision will be whether Wang goes ahead with the introduction of a new top-end VS system, code-named Mercury. "If they go ahead and launch it, then it will add three to five years to the life of the VS range," he said.

If Wang could move applications, particularly the PACE database, products to the RS/6000 platform in a timely way, this could be a positive move, Crawford said. "But from

Where to next?  
Wang has employment by about half in recent years,  
and further cuts are anticipated.

**WANG**

Worldwide employee numbers

July 1, 1988 .....	31,000
June 30, 1989 .....	28,000
June 30, 1990 .....	28,000
March 31, 1991 .....	17,000

CW Chart: Steven H. Johnson

a product standpoint, I still have a lot of questions," he added.

One VS manager at a large VS installation on the West Coast noted, "The RS/6000 version addition seems to be good news, but I want to know more before I start up and chip."

IBM will initially invest \$25 million in Wang in the form of debt securities that may be con-

verted to Wang Class B common shares. Additional funding of up to \$75 million could be provided, based on fulfillment of other — as yet undisclosed — terms of the agreement.

Wang's imaging software will be configured to run on the IBM RS/6000 platform. Acknowledging there were some synergies between the two vendors in several areas, IBM spokesman Jim Raderman said, "We look at the bigger picture in terms of benefits and broader market channels."

Casey Stern, managing director at Starr Securities, Inc., a financial consulting firm in New York, hailed the joint venture as beneficial to both companies. IBM will gain an important imaging value-added reseller and access to the Wang base, and Wang will be able to eliminate manufacturing costs while migrating customers to open platforms.

However, Wang customer Jim Heekope, manager of data processing at Gothen Rubber a product standpoint, I still have a lot of questions," he added.

One VS manager at a large VS installation on the West Coast noted, "The RS/6000 version addition seems to be good news, but I want to know more before I start up and chip."

IBM will initially invest \$25 million in Wang in the form of debt securities that may be con-

# IBM pushes RS/6000, tries to up RISC appeal

BY PATRICIA KEEPEE  
CW STAFF

IBM is looking for ways to boost sales of its RISC System/6000 processor line and at the same time broaden markets for its reduced instruction set computing (RISC) chip set.

IBM's pact last week designating Wang Laboratories, Inc. as a value-added reseller of the RS/6000 and Personal System/2 lines follows on the heels of reports that the computer giant is discussing an RS/6000 license with Apple Computer, Inc.

Analysts said last week that IBM is particularly worried about the Advanced Computing Environment (ACE) RISC consortium and wants to counteract it before it gets too far.

"They need to counter Mips [Computer Systems, Inc.] with ACE," said Frank Danbeck, president of Communication Network Architects, Inc. in Washington, D.C. "As big as they are, they can't afford to go it alone," added Bill Sines, an analyst at Framingham, Massachusetts Technology Investment Strategies Corp.

"IBM fears being relegated to third in the porting schedules of software vendors," said Tom Kuchayra, an analyst at Summit Consulting Board.

IBM has probably realized

that in order for the RS/6000 to be a market standard, it will have

to get the support of other vendors, some form of a consortium, according to Tom Sapiro, an analyst at Strategic Research International. "If IBM and Apple did produce a sophisticated operating system based on the RS/6000, it might pull some [other vendors] into their corner."

### Motivating force

Despite recent claims by IBM that it has never ruled out licensing of its chip set, Kuchayra said ACE is the motivating force behind IBM's apparent sudden interest in spreading around its proprietary technology.

"The rules have changed since the announcement of ACE," Just said. That set, he was speaking of Bill's Jeff Masoli, and he was adamant that IBM was not interested in licensing or OEM'ing its RISC to others. It's a dramatic reversal," he added.

The general theory among analysts is that IBM will annoy Motorola, Inc. — Apple's chip supplier — as its second source, both to satisfy government contract requirements and to provide a go-between for potential licensing and OEM arrangements. The Motorola connection makes sense because IBM is not in the business of selling chips, according to Danbeck.

West Coast Senior Correspondent J. A. Savage contributed to this report.

decrease 40% of its existing 17,500 member workforce.

William Sines, director of midrange systems at Technology Investment Strategies Corp. in Framingham, Mass., summed up Wang's position as "embarking on the last, final, desperate measure to transform itself into a software company."

Sines projects that within two years, Wang will most likely emerge as a software supplier of both office automation and imaging products.

conversions at several government sites.

"A large conversion typically takes between six and eight weeks, but most of that time is devoted to the document review cycle," Gross said.

Using Data Conversion Lab conversion software, customers mount Wang backup tapes directly onto an AS/400 equipped with a 9-track tape drive. The conversion software reads the backup tape and reassembles it for the AS/400.

Gross said converting word processing applications requires more time than converting tradit-

tional database applications does. "Text cannot be done on a strict, code-to-code translation. It must be reviewed on a document-by-document basis, taking into consideration just what the code was intended to do in each case," he explained.

Within the past two years, the Data Conversion Lab has converted about 100 Wang word processing installations to IBM personal System/2 and OS/2 network environments, and the company has also conducted some conversions from Wang to IBM RISC System/6000s.

SALLY CUSACK

## Wang-to-IBM converts call changeover a success

**NEW YORK** — While some Wang VS users hesitate to implement a conversion from Wang Laboratories' Inc.'s VS to IBM's Application System/400, several have already successfully completed the task according to Mark Gross, president of the Data Conversion Laboratory in Fresh Meadows, N.Y.

An IBM business partner, the Data Conversion Lab has been

working with Wang customers for the past two years to convert 30 Wang VS sites to AS/400 systems.

While VS-to-AS/400 conversions occur primarily in manufacturing and distribution, Gross said other industries are represented, too.

For example, the Data Conversion Lab was instrumental in helping Nashville-based St.

Thomas Hospital convert several VS systems to AS/400 platforms and has participated in

These days, it seems almost everyone has a favorite Graphical User Interface (GUI). And most organizations also have non-graphical user interfaces running on block mode terminals, character mode terminals and PCs. Which means that developers must spend months rewriting each application for each incompatible system.

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## Amadeus: Ready to fly?

BY ELLIS ROOKER  
CW STAFF

Two years late and \$130 million over budget, Europe's largest computerized reservations system (CRS) seems at last to be taking off.

The gigantic Amadeus Global Travel Distribution System, believed to be Europe's largest commercial systems project, has endured delays and cost overruns. The project will have soared beyond the original \$400 million budget to cost \$530 million by the end of this year, a spokeswoman said.

Amadeus is undeniably late to market. It was scheduled to go live in mid-1989, but the rollout of the various "trunks" CRS systems will not be completed until December, with the addition of hotel and car rental subsystems coming early next year.

The problems have caused finger-pointing among the four European airlines that originally sponsored it and the companies, including IBM, that were hired to build it.

However, the Amadeus spokeswoman in Madrid told *Computerworld* last week that Amadeus' main data center in Erding,

Germany, is up and running. The facility has been testing the flight availability and scheduling portion of the CRS since June 17, she said.

Next month, the first national CRS will be cut over into Amadeus, the spokeswoman said, and by the end of July all of the regional airlines should be connected to the system.

By December, some 60,000 terminals will be linked, and next year, travel agents will begin using a common Amadeus base instead of separate national ones, the official said. "Amadeus will handle 120 million bookings a year, and by the end of the year 2000, we expect to double this," she said. "Amadeus and IBM underestimated the complexity of the project.... We had to specify additional functions-

ity," she added.

Founded in 1967, Amadeus grew from a partnership of Air France, Iberia Airlines of Spain, Lufthansa German Airlines and the Scandinavian Airlines System. The four airlines awarded an oversight contract to IBM Europe, which in turn selected System One to develop the core CRS software. System One is a subsidiary of Continental Airlines Holdings, Inc.

The original plan was simply to enhance existing System One software, according to Al Lessa, vice president of planning and administration at System One. "But [the] administration is now radically different.... We've done it from scratch," he said.

The end result was that development time grew from the expected 60 months to 500 man-years, Lessa said.

Further complicating the situation, a marketing pact with AMR Corp.'s Sabre CRS strained the relationship between Amadeus and System One, which viewed Sabre as a direct competitor last year.

Sources familiar with Amadeus said its problems have less to do with technology and the performance of System One and IBM and more to do with the project's shifting requirements.

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## IBM closer to XGA standard

BY MICHAEL FITZGERALD  
CW STAFF

**N**EW YORK — IBM will take another step in the year toward turning Video Graphics Array into an old standard.

IBM will take a next on the Video Electronics Standards Association's (VESA) Extended Graphics Array (XGA) subcommittee in an unusual response to requests from board makers anxious to ensure a third-party standard that is compatible with IBM's XGA specification.

VESA Chairman James A. Anderson, director of marketing at Headland Technologies, Inc./Video Seven, said he thinks this move by IBM will make it more likely for XT/AT bus manufacturers of XGA to be outlined by Comdex/Fall '91, when VESA holds its next meeting.

For users who may eventually wish to buy XGA boards for XT/AT bus machines, it will mean less fear of incompatible hardware.

Anderson said a VESA XGA standard that was not compliant with IBM's would result in a fragmented market and would limit the possibility of XGA becoming "a pervasive standard."

Such cooperation on a hardware development is unusual for IBM, acknowledged Jim Vitello, manager of graphics subsystems product management at IBM. Vitello termed the move a sign of IBM's efforts to be more responsive to customers.

"In my opinion, IBM wants to see XGA become a standard and it's the silicon houses that . . . create that market," said Fred Dunn, vice president at graphics research firm Jon Peddie Associates in Oakland, Calif.

XT/AT bus XGA boards could appear in the second quarter of 1992 if the committee meets its interim deadlines and is able to address ways to remove XGA's bus-interference capabilities so that it can work on the XT/AT bus.

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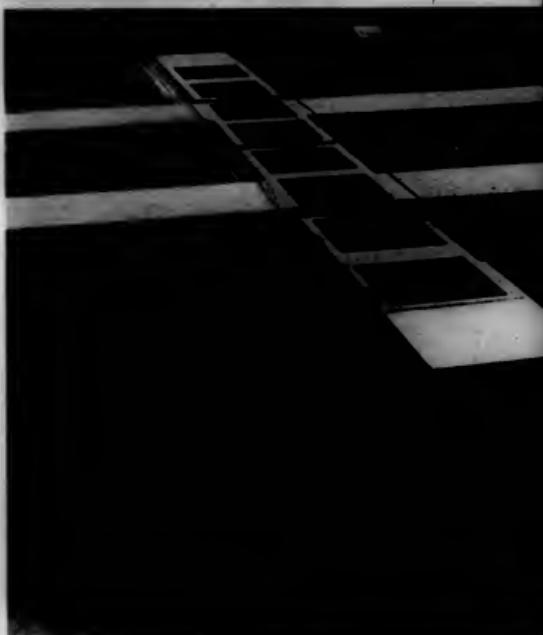
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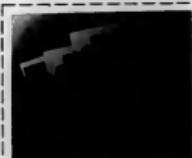
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## Mitsubishi blames AT&T for security breach

BY MICHAEL ALEXANDER  
CW STAFF

**NEW YORK** — In only two months last summer, computer hackers rang up \$436,000 in unauthorized telephone charges on a private branch exchange (PBX) belonging to Mitsubishi International Corp.

Last week, Mitsubishi sued AT&T in U.S. District Court for allegedly failing to warn it of the risk of fraud and for not responding quickly enough to identify and combat the source of the problem. Mitsubishi filed the suit in response to threats of legal action by AT&T seeking payment

for the unauthorized charges.

The PBX, an AT&T System 85, was installed in the summer of 1988, according to a Mitsubishi spokeswoman. In July 1990, hackers began attacking the system in an attempt to make calls using a remote-access feature that allows employees anywhere in the country to charge calls using a personal access code. From July to September, the hackers, who remain unidentified, made more than 1 million attempts to break into the system, the spokeswoman said.

Mitsubishi had issued a request for proposals, "emphasizing the importance of a secure and cost-effective system,"

the spokeswoman said. "We bought the system with the understanding that it met those needs."

Some employees at Mitsubishi began experiencing problems accessing the PBX in the summer, but it was not until the firm received a "huge" telephone bill that it became aware of a problem with the system, the spokeswoman said.

An AT&T spokesman declined to discuss the Mitsubishi case in detail, saying the suit was without merit. "Under the law, customers are responsible for calls that originate from their system," the spokesman said. "AT&T has conducted itself properly and not in any negligent

way in manufacturing, sale, presentation or description of the product."

The security features in the PBX are well-documented, the spokesman said.

Estimates of losses as a result of PBX fraud vary widely, but experts agreed that the figure amounts to many millions of dollars per year.

"PBX fraud is a closely guarded, dirty little secret by many companies," said William Cook, assistant U.S. attorney in Chicago. "The highest figure that I have run into is \$1.4 million, lost by one company over a four-day holiday weekend."

The fraud is perpetrated when hackers get hold of an extended code that controls the remote-access feature, "hit the PBX as hard as they can and drive up the loss figure in a matter of days," Cook said.

Who is responsible for picking up the tab when fraud occurs is often a matter of dispute, unless the liability for charges results from a security breach is spelled out in a contract, said Brian Moir, legal counsel for the International Communications Association in Washington, D.C. "The carrier, the systems integrator if there was one, the equipment vendor and the customer should know ahead of time the warrants and responsibilities if there is a problem."

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## Microsoft hot line feeling the heat

BY CHRISTOPHER LINDQUIST  
CW STAFF

Two weeks after the release of its MS-DOS 5.0 upgrade package, Microsoft Corp. is already reaping the benefits—and the strains—of success.

Brad Chase, group product manager for MS-DOS at Microsoft, said sales of the upgrade were "even better than our wildest expectations." He added that Microsoft had 1 million orders for the upgrade before it was announced.

It is not uncommon for a 2% to 5% range of an installed base to rapidly upgrade to a new version of a software product, said Bill Higgins, director of software research at Computer Intelligence/Info-corp. "In the U.S., there are probably 25 million or 30 million installed-base DOS systems out there that could be upgraded."

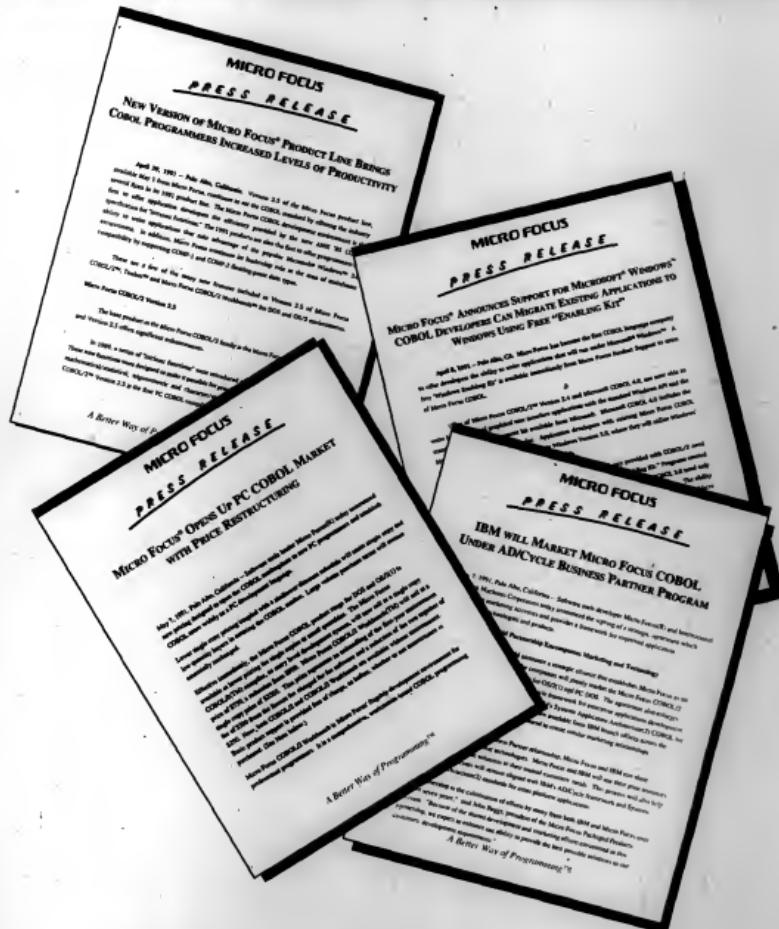
However, one of the prices for the success of the DOS upgrade has been a tremendous increase in the number of users requesting support.

The CompuServe MS-DOS forum received such a large number of messages that some were being "scrubbed" off the forum before the operators had a chance to respond to the questions. A bulletin on the forum indicated that the systems operators were having trouble keeping up with the traffic.

Simultaneously, Microsoft's 90-day free support lines were ringing off the hook. One technician contacted by *Computerworld* said some of the MS-DOS support people were suffering a bit from "shell shock" when the number of calls went from 20,000 to 1,000 per day.

Chase said the support lines and CompuServe forums were receiving more traffic than the company anticipated because of the higher than expected sales. He added that the company will be evaluating the need for more support technicians.

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# Wallington to lead SIM

**Xerox CIO will be first woman president in group's history**

BY CLINTON WILDER  
CW STAFF

**CHICAGO** — Patricia M. Wallington, the high-profile vice president and chief information officer at Xerox Corp.'s U.S. marketing group, will become the first female president of the Society for Information Management (SIM) next year.

Wallington was recently voted president-elect of SIM for the year beginning July 1, 1992. She will serve as president until June 1993. She has been active on

the SIM board of directors for several years and has served as the association's vice president of finance for the past year.

A Philadelphia native, Wallington was a director at Sun Co. and senior vice president at Massachusetts Mutual Life Insurance Co. before joining Xerox in her current position in October 1989. She holds a bachelor's degree in accounting and finance from the Wharton School and a master's degree from Drexel University.

John W. Owens, vice president of infor-

mation systems at Carrier Corp., will take over as SIM president July 1. He succeeds Laurence T. Burden, whose year as SIM president was marked by his resignation as CIO at S. C. Johnson & Son, Inc.

## New positions

The state of SIM officers for 1991-92 includes a new position, vice president of chapter relations. John M. Hammett was named to the position, which was created to promote active relations between SIM's local chapters and the national organization. He was president of SIM two years ago.



Wallington is VP, CIO of Xerox's U.S. marketing group

There are two other new officers for the coming year: James R. Kinney, vice president of distribution IS at Kraft General Foods, Inc., succeeds Wallington as vice president of finance. Robert M. Rubin, vice president of information services at Atchison, Inc., takes over as vice president of communications from Madeline Weiss at Weiss Associates, Inc.

James A. Senn at Georgia State University will serve another year as senior vice president, international, and Ross Abrahams, director of MIS and telecommunications at Olin Corp., continues as vice president of programs and products.

SIM also elected four at-large directors: Richard D. Koeller, vice president of information technology at Whirlpool Corp.; John F. Rockart, director of MIT's Center for Research; Thomas L. Pettibone, senior vice president at New York Life Insurance Co.; and Susan Mervaise, vice president and general manager of IS at Weyerhaeuser Co.

## Cincom Systems to widen scope

BY ROSEMARY HAMILTON  
CW STAFF

**CINCINNATI** — Cincom Systems, Inc. mapped out additional plans last week to broaden its product line, and several customers interviewed said they believe the company is making the right moves.

Dennis Howes, a database administrator at Pierce County Medical in Tacoma, Wash., said that although his shop is mainframe-based now, the Cincom strategy gives him options in case his company's information systems plan changes in the future.

He is particularly interested in Cincom's move to the desktop because "we added about 100 PCs last year," Howes said. "I'm impressed with their strategy. Sometimes they give us so many choices I almost wish they were more limited."

### Multiplatform strategy

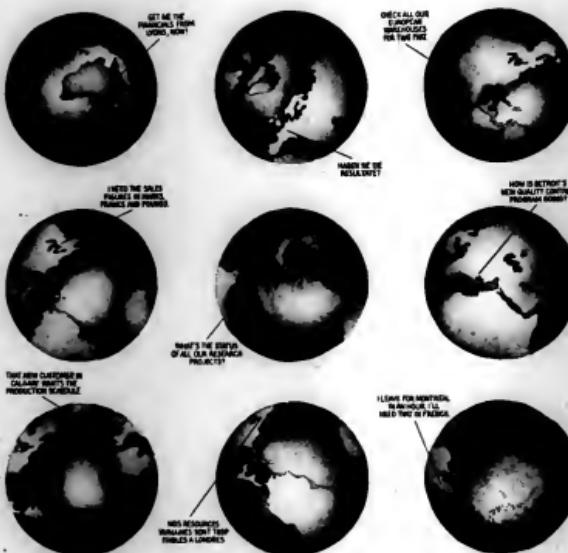
At the annual Cinteract user conference held here last week, company executives pushed the concept of a multiplatform, multiproduct strategy.

This included several announcements, such as additions to its recently announced applications development environment, AD/Advantage, as well as support for new platforms for its mainline software.

Cincom introduced Metastar, a key software piece in its applications development strategy that is designed to integrate other vendor's repositories and data dictionaries. The company said it intends to provide a repository component to AD/Advantage at a later date.

Last week, Cincom said a Supra version for the IBM Personal Computer and Personal System/2 is in beta testing and will be generally available later this year.

The company has an ongoing strategy of moving its key products, the Supra relational database management system and the Martin fourth-generation language, to Digital Equipment Corp. VAXs and Unix platforms.



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## HDS' first Summit class takes off at Delta Air

BY JEAN S. BOZMAN  
CW STAFF

**ATLANTA** — The first of a new generation of mainframes has landed at Delta Air Lines, where Hitachi Data Systems, Inc. (HDS) installed its first IBM Enterprise System/9000-compatible EX 420.

Installation of the 150 million instructions per second (MIPS) machine came June 8, within the original goal HDS had planned last fall. It also came two months before competitors IBM and Amdahl Corp. are to begin general delivery of IBM Summit-class mainframes.

"The main purpose for this HDS EX

420 is to run a crew-scheduling application in our MVS/ESA environment," said Russ Eubanks, director of information services operations at Delta. The system was installed in the MVS/ESA test system and then switched into three separate MVS production systems, one at a time, Eubanks said. "That's just the way we're planning it in," he said. "We want to test it against each of our software systems." He declined to comment on any specific performance figures.

The EX 420 is priced at \$14.4 million for a minimum configuration of 256M bytes of main memory and 64 channels, with each channel running at 4.2M byte/

sec. HDS took one EX 100 in trade for the upgrade, Eubanks said.

Another of Delta's four HDS EX 100s is scheduled for upgrade to an HDS 420 sometime this fall, Eubanks said.

Delta's flight-crew scheduling application was selected as the target system for the HDS 420 because of the need to keep response times low. "When we set up a new schedule, all the flight attendants get to type in their bids for the routes they want to fly," Eubanks said. "It's a manual member-cruncher, and that's why we need the MIPS." The scheduling application runs on Software AG of North America, Inc.'s Adabas database.

Industry analysts said HDS did get its Summit-class machine installed in advance of its mainframe competitors but added that the marketing move may not make any practical difference in sales.

"The good news is the EX 420 is the first of the new Summit generation to ship, but the bad news is they'll be very limited on the supply coming out of the factory for the rest of the year," said Frank Gens, vice president at Technology Investment Strategies Corp. in Framingham, Mass. Gens estimated that fewer than 20 EX 420 machines will be shipped by HDS before 1992.

When IBM ships its ES/9000 Model 900 this August, it may pack as much as 230 MIPS instead of the announced 202 MIPS, Gens said. That could blunt HDS' lead, unless HDS announces a bigger, faster processor next month, as some analysts said they expect.

Amdahl and IBM are expected to make their high-end systems — the Amdahl 5956 M and the IBM ES/9000 Model 900 — generally available by year's end, according to analysts.

## Lotus bags third copyright win

BY PATRICIA KEEFE  
CW STAFF

**CAMBRIDGE, Mass.** — Three down; one to go. Lotus Development Corp. wrapped up its third straight copyright infringement win last week, when The Santa Cruz Operation (SCO) agreed to cease production of its Unix-based clone of Lotus' 1-2-3 spreadsheet.

Lotus won previous suits against Parabellum Software International, Inc. and Mosaic Software, Inc. All three companies were accused of copying the look and feel of 1-2-3's menu.

A fourth case, still pending against Borland International, Inc., differs slightly in that Borland's Quattro Pro spreadsheet features a Borland-designed interface with an optional 1-2-3 menu.

The settlement with SCO is not expected to affect the Borland case.

Under the terms of the out-of-court settlement, SCO will stop manufacturing, distributing and licensing all versions of SCO Professional by Aug. 15. SCO will continue to support Professional users. In return, Lotus will drop its suit.

SCO Professional users are being urged to migrate to Lotus' 1-2-3 for Unix System V, which supports SCO's Open Desktop, XENIX 386 and Unix System V/386.

To encourage migration, Lotus is offering Professional users a \$200 price break on the multiversion version of 1-2-3 for Unix System V.

Although Lotus said Professional does not have a large installed base, David Rose, Lotus' director of Unix products, said that by 1995, Unix could represent as much as one-third of new desktop operating systems.

Separately, Lotus and Borland traded words over the outcome of a patent conference held last Tuesday. U.S. District Judge Robert Keeler delayed ruling on Lotus' request for a summary judgment, while giving Borland until Sept. 30 to submit a brief outlining factual matters that it proposes to submit to a jury.



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## ADVANCED TECHNOLOGY

### TECH TALK

#### More multimedia money

IBM has extended its funding of multimedia research projects at MIT's Media Lab. A three-year contract for \$1.5 million will be applied in four areas: using movies and still images in multimedia computer applications; sharing digitized images among workstations; analyzing the effectiveness of color in computer displays; and developing personalized newspaper-like interfaces to information for computer users. The Media Lab, founded in 1985, has spawned such futuristic inventions as computer-generated three-dimensional holograms.

#### Collider computer

Engineers at the Superconducting Collider Laboratory (SSCL) have selected the Intel Corp. iPS/860 parallel supercomputer to help design the world's largest particle collider. The collider, part of a multimillion-dollar project funded by the U.S. Department of Energy, will be built over the next eight years to investigate the fundamental forces and building blocks of the universe. The Intel supercomputer delivers the dedicated processing power equivalent of seven mainframes or four conventional supercomputers at a fraction of the cost, said George Bourianoff, diagnostics section leader at the SSCL.

#### Pack of publishers

Some of the top publishers of multimedia applications on compact disc/read-only memory (CD-ROM) have banded together to form the Multimedia Publishers Group (MPG). The trade group will promote sales of software on CD-ROM, especially to consumers. Charter members include Grolier Electronic Publishing, The Software Toolworks and Warner New Media. MPG members will display an MPG Seal of Quality on their packaging and product displays. The organization will be administered by Advanced Strategies Corp., based in Great Neck, N.Y.

## Virtual reality still unrealistic

*To succeed, technology must eliminate physical barriers to everyday office use*

BY MICHAEL ALEXANDER  
CW STAFF

**V**irtual technology goes a long way toward removing the psychological barriers between humans and computers, but ironically, the electronic gear needed to create three-dimensional worlds can itself be a physical barrier between humans and computers.

The virtual reality systems developed by VPL Research, Inc., the National Aeronautics and Space Administration and other leaders in the field consist of a cumbersome headset with goggles and a data glove with fiber-optic cables connected to a computer like umbilical cords. The headset can weigh five pounds and measure two inches from front to back. A user who wants to be completely immersed in a virtual reality world must don a data suit that envelops him from the neck down.

Virtual reality, even if perfected, is too impractical for everyday use, according to Mark Bolas, president and founder of Fafe Space Labs, a Menlo Park, Calif.-based product design and engineering firm specializing in virtual reality technology. For the technology to take off in a big way, it will need to take into consideration the realities of the business world, he said.

"Having to wear a headset — to suit

up — is invasive," Bolas said. "You don't want to impose devices on somebody. You want them to be able to gradually leave this world and go into the virtual reality world. It's like talking on the telephone: you don't pick it up and you're instantly talking to someone. You gradually enter into conversation and you choose how involved or unin-

viewer as accessible and easy to use as a telephone," Bolas said. "Say you're working behind a computer. You can reach over and grab it with one hand and pull it toward your face and look around in a 3-D world," he said. It is a convenient interface, and it can be used for everyday real-life applications, he added. Also, virtual reality can be easily passed between users, allowing an architect to show a client a work in progress, for example.

Scientists in the computational fluid dynamics group at NASA's Ames Research Center are using BOOM in a virtual wind tunnel to test space shuttle design. When wearing data gloves, the scientists can create virtual smoke that flows over the shuttle surface to provide visual clues as to aerodynamics.

Bolas' team uses CRTs in the viewer instead of the LCDs that are typical of virtual reality headsets because the tubes deliver images with higher resolution.

The arm has optical encoders — sensors — on each of its six joints to indicate how much the joint is rotated. The head gear in other virtual reality systems use magnetic trackers, which do not respond as quickly, Bolas said. As a result, BOOM images are more stable than those of the jitter and electronic noise that plague head-mounted systems, he said.

**BOOM 2.** Fafe Space's current model, sells for \$27,000.

## Bellcore's superconducting breakthrough

BY MICHAEL ALEXANDER  
CW STAFF

**R**esearchers at Bell Communications Research, Inc. (Bellcore) in Red Bank, N.J., have developed a new process for making high-temperature superconducting devices that could help pave the way for ultrafast telecommunications switches and powerful computer circuitry.

When cooled, superconducting materials are free of the electrical resistance that can generate heat and cause a loss of power. Both heat and power loss are especially important concerns as computer chips become smaller and switching speeds increase.

The researchers, Arun Inam, Chick Rogers and R. Ramas, have found a way to layer extremely thin films of superconducting and nonsuperconducting materials. Individual atoms in the two materials are aligned precisely so that electrical connections between the layers are greatly improved.

Using a technique developed at Bellcore called pulsed excimer laser deposition, Inam and his colleagues grew pro-

totype devices made up of atom-thin layers of superconducting and nonsuperconducting copper oxides. Within each layer are compounds of linked copper and oxygen atoms, which carry most of the electrical current.

"The key to our breakthrough is that we were able to make the copper-oxide planes within each layer stand up vertically and line up end-to-end," Inam said. "This alignment, making the planes perpendicular to the surface of the chip, allows for the best flow of electric

current supercurrents through various layers."

The research has led to higher quality Josephson junctions, a critical link between superconducting materials. Existing Josephson devices have limited performance, and their locations on a chip cannot be controlled. Bellcore's new technique does not have these limitations and may make it possible to someday mass-produce superconducting devices.



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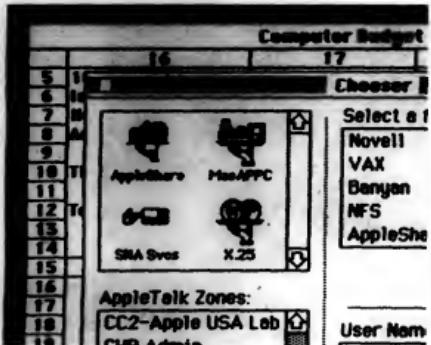
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While diversity may make life rich and fascinating, it makes life as an IS manager something short of serene.

What is politely referred to as the "multi-vendor environment" is an amalgam of disparate hardware, incompatible operating systems, dissimilar databases, and multiple networks. Nevertheless, IS people are expected to make these all work together in perfect harmony.

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## EDITORIAL

## Apocalypse now

**T**here's a bloodbath coming.

At least that's the way the CEO of one major computer maker put it to us — almost prophetically — one week ago today in summarizing his vision for the computer industry.

That was just a day before IBM and Wang announced a deal that seemed to preface Wang's exit from the computer hardware business. It was that same day that news broke about an anxiety-provoking memo penned by Microsoft founder Bill Gates. And three days before IBM dropped a thermonuclear egg declaring that revenue growth for the current year is not a likelihood for the world's biggest technology company.

In the minds of many economists, the recession is grinding to a halt, and some are even talking about an aggressive expansion to follow, especially given that 1992 is a presidential election year.

For the computer industry, however, IBM might be signaling the start of the bleakest period in the industry's history, at least for several major players. If this is the case, the ramifications for the customer base are profound, to say the least.

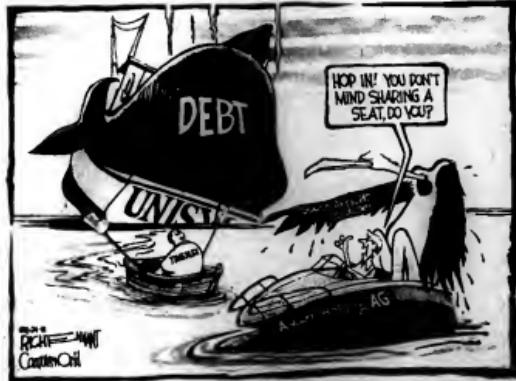
The employment ranks of several major players in the industry are destined to be thinned, perhaps greatly so. At Wang, for example, where employment peaked at just over 30,000 a couple of years back, the likelihood of that company's exit from hardware manufacturing could result in half of the remaining 17,000 workers losing their jobs during the next 18 months. Some observers feel DEC could be overstuffed to the tune of 25,000 workers. And could IBM be staring down the maw of tremendous overcapacity and tens of thousands of pink slips?

That's one phase of the bloodbath.

The other is already under way in the marketplace. Facing flat demand in key markets and overcapacity on their factory floors, vendors are slashing prices in a heated market-share game. Margins erode, profits fall, cost-cutting pressure rises and layoffs mount.

Even a robust economic rebound will not do much to stanch the fiscal hemorrhaging. Why? Because the very nature of the computer industry is undergoing fundamental and irreversible changes. The commodity nature of PC hardware has taken away the premium-price advantage formerly enjoyed by Compaq and IBM. How long before this wave of change moves upstream and sweeps over the workstation market — and markets beyond? And as the shrink-wrap PC software market has demonstrated, the commodity nature of things is not confined to hardware.

But there is such good news for the customers, particularly once the economy gets going again and they have some money to spend. Because when that time comes, they will find deals like they've never seen before. They will also be facing a vendor landscape that will be changing in structure almost kaleidoscopically before their eyes.



## LETTERS TO THE EDITOR

## Volume problems

The article "Distributed DBMS decisions" [CW, May 6] calls client/server DBMSs "best for high-performance, high-transaction-rate computing."

Experience shows that programs that divide client and server at the level of database calls (where client workstations send SQL statements to a remote database server) are not well-suited for on-line transaction processing (OLTP) — let alone high-volume OLTP — because frequent SQL calls between client and server inhibit performance. Some DBMS vendors address this deficiency by providing stored procedures.

But, few, if any, of their products integrate this facility with a transaction-processing monitor to help configure and manage the application. High-volume OLTP systems must manage hundreds or thousands of devices that generate transactions and, potentially, hundreds of processes that manage transactions.

Management is a concern in all OLTP applications because today's low-volume application can become tomorrow's high-volume application.

*Robert D. Holbrook  
Tandem Computers, Inc.  
Cupertino, Calif.*

## Missed the point

Regarding "Distributed DBMS decisions" [CW, May 6], I found George Schausel's comments on distributed databases timely but inaccurate and in conflict with Chris Date's original distributed database guidelines, published by Computerworld in 1987.

In that article, Date pointed out that location independence

must apply to the management and administration of data as well as its use. Current DBMSs are unable to provide database administrators and programmers with true location transparency of distributed data during an insert, update or delete. Referential integrity must be enforced manually for each data relationship across locations through the use of database triggers or program code.

Despite some vendor claims, none of the products touted by Schausel as true distributed database managers can automatically enforce referential integrity in a single location, much less across multiple locations.

There is almost no chance of distributed update technology maturing by 1993, as implied in Schausel's article. It is time that industry media take responsibility to clarify the facts before some information systems departments find out the hard way about the current impracticality of true distributed databases.

*Garland Faversich  
Novellus, Ge.*

## Pay your own way

In "Fresh faces give FCC new views" [CW, May 13], Sherrie P. Marshall of the FCC is quoted, "At some point, we'll all have a computer on our desk and a phone in our shoe. But who will pay for it?"

I submit the following questions to Ms. Marshall: If I want a pencil, who should pay for it? If I want a car, who should pay for it? The obvious answer is that I should. So if Ms. Marshall wants a computer on her desk and a telephone in her shoe, who should pay for it? She should!

Anyone confused enough to

ask the original question will find the only sensible answer quite beyond understanding, so I imagine it is Ms. Marshall's intention to arrange for me (and other taxpayers) to pay for her computers and phones. I can only hope that I am wrong.

*C. W. Kriegel  
The Boeing Company  
Wichita, Kan.*

## Value pricing

Your story, "Changes coming for graduated pricing" [CW, June 3], may leave the impression that significant changes in our software pricing are imminent.

Our current software pricing approach is based on the value the product provides. One element of software value is derived from processor capacity and performance. Graduated software pricing enables us to reflect that value.

My comments concerning potential software pricing modifications were made in reference to changes in future technology. All future changes will continue to reaffirm our dedication to the principle of pricing for value and total systems competitiveness.

*R. H. Goldberg  
Software Marketing  
IBM  
White Plains, N.Y.*

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# Cobol: The successful failure

*People keep counting it out, but Cobol is still the language of business*

JOHN M. BRADLEY

**It's not often that a computer programming language is pronounced dead before it is even born.** That, however is precisely what one person implied about Cobol while it was being designed in the 1950s.

The gentleman in question disagreed with a number of design decisions and believed that Cobol was doomed as a computer programming language. To make his point, he presented the committee with a tombstone engraved "Cobol — R.I.P."

Retrospectively, it seems that this gesture was somewhat premature, since Cobol is currently the most widely used commercial computer programming language in the world. Nevertheless, it also appears to have been an omen, since Cobol has been declared dead more often than any other programming language in the history of computer science.

The first postbirth announcement of Cobol's death came in the late 1960s, when IBM started predicting that it would be replaced by PL/I within a few years. As it turned out, of course, the vast majority of the

computing world stayed with Cobol, and within 10 years, PL/I was largely dead as a commercial programming language (at least outside of IBM).

Later, the academic community took its turn, pushing its ill-fated favorite, Pascal. Then, in the early 1980s, panic over the Japanese fifth-generation computer project spurred the development of another class of contenders, the so-called fourth-generation languages (4GLs).

#### A long way to go

The computing world is still awash with hype about 4GLs and their cousins, the computer-aided software engineering (CASE) tools. It is clear that these products hold much promise in the long term. However, it is also clear that there is still a long way to go before any of these products can be standardized.

One of the most formidable recent challengers to Cobol is the C language, which is currently advancing under the banners of Unix and open systems.

Despite its strong lobby, the idea of C as the dominant commercial programming language is clearly pure fantasy. Most computer scientists acknowledge that there are some obvious flaws in Cobol and that working on some 100,000-line Cobol

programs can be very distasteful. However, any seasoned C programmer knows that the only thing worse is working on most 100,000-line C programs. Moreover, although C is a very good scientific and systems programming language, it is very weak in the areas of numerical accuracy, range and I/O, which are something important in commercial programming.

All this talk about "open systems" is humorous because Cobol has been an open systems programming language from the very beginning. Moreover, this is one of the main reasons why it has been so successful. Veterans of commercial programming remember how much effort and expense went into converting systems from assembly language to Cobol and how they stored at the time that they would never do anything like that again. They also remember why they chose Cobol — so they wouldn't have to do it again.

As the price-performance ratio moves away from mainframes and toward open systems, it is likely that companies will start to move their Cobol systems into the open systems arena. This will not weaken Cobol but will strengthen its position.

There are several reasons

why I say this. One is that institutions will not rewrite their software unless there is a commercial benefit to doing so, such as greater portability, reduced maintenance or improved future development options. Wise customers who have resisted the extensions and proprietary Job Control Languages offered by the larger computer vendors in an effort to lock sites into their product lines still have all of these benefits in Cobol.

Furthermore, Cobol's portability will become increasingly important as the trend toward open systems brings about increased competition and lower profit margins. In the long run, the weaker suppliers will almost certainly go bankrupt, leaving some customers high and dry. Under such conditions, portability will become vital.

It is probable that improvements in technology will ultimately render Cobol obsolete. At this time, nobody knows exactly what event will cause this or what the replacement will be. It may turn out to be a 4GL, a CASE tool, a new form of programming or something else.

One thing is certain though: Cobol will be declared dead several more times before it really dies. Even when it is finally killed off, a lot of people probably still won't believe it.

Bradley is president of Ryan McPartland Corp., a provider of Cobol-based programming tools. He participated in the development of REXX/Cobol-85.

No highly paid computer virus expert could have said it better.

Like everything else, there is a downside to being careful. Clifford Stoll, author of *The Cuckoo's Egg*, a pop primer on computer security, told me recently that too much security or suspicion on open computer networks could serve to choke the free exchange of ideas that has been the backbone of the software industry.

Stoll is right about the dangers of going overboard with security measures. There are antivirus remedies readily available to individuals who have computers that are already infected, and

you know what they say about an ounce of prevention. Recent issues of *Spy* magazine have advertised vinyl computer protective foils for monitors and CPUs; however, they will do little to battle the type of communicable infections most users worry about.

Nope, Fordland's advice is the best — be careful about bringing home programs you don't know very well. And remember where you read it first.

Pasquino is a senior writer at Digital News in Boston.

# What year is this?

READER'S PLATFORM  
JERRY SITNEK

If data were available to measure average time needed to implement new programs and maintain those programs today, we would find very little difference compared with the time needed back in 1965. This should be quite shocking, given the advances made in hardware and software during that time.

In 1965, data processing was still using 80-80 card source program decks. Computers were much slower. There was no such thing as on-line submission of program test runs. An average programmer day would allow around three submissions of program tests (compared with 10 or 12 today).

So why, with everything so much faster and easier, aren't we more productive? The answer is quite simple.

In 1965, the time spent between test submissions was used for desk-checking the programs to verify the validity of the test submitted. When the desk checking uncovered a flaw in the test, the programmer spent the remaining time analyzing and preparing for the next test. Now there isn't enough time between tests to do the same kind of desk-checking, which leaves the programmer with two choices: He can reduce the number of test submissions to allow for productive desk-checking, which means his test submission frequency resembles that of 1965, or he can use a trial and error approach — not a happy thought.

No matter how many technology advances are made to permit quicker test-submission turnover, there will be little improvement in programming productivity or maintenance costs.

So how can we improve programming productivity? It's fairly simple. Since program analysis is the biggest time consumer in programming, our efforts should be directed at reducing analysis time by making code that code is understandable.

This should be a top priority in every data processing installation, but I don't know of even one where clarity of code is a priority at all, let alone the top priority. Somewhere, someday, a data processing manager has to take a stand and refuse to allow a fully tested program into production because the coding is not clearly understandable. That's the only way we'll find a route to programming productivity.

Sitnek is president of Charity Concept Systems, a software and consulting firm in New York.

## Elvis lives, but he avoided computers

JOE PANEPINTO



Ergonomic and low-level radiations, warnings aside, the latest word from a very reputable supermarket tabloid is that computers may be dangerous to your health.

Yes, folks, despite the skill warnings and voluminous data cast by highly paid computer security experts into the marketplace about the health threat posed by computers, it took *The Weekly World News* to finally tell the truth in a stunning headline: "...Man Catches Computer Virus!"

It seems program-infecting viruses, worms, Trojan horses and logic bombs common to loose hard drives and wayward applications have been communicable to humans all along, according to a supermarket tabloid that is better known for its weekly Elvis sightings. As a result of the story, individuals accused of having a love affair with their computers have one more thing to worry about.

After all, the number of identified computer virus infections

has risen from 3,000 in early 1985 to more than 30,000 today, according to Adisop. May be now, with the very real prospect of data-destructing infections jumping from computer to programmer and back again, users will take the safe computing tips of the experts more seriously. We wouldn't want to lose any

for downloading strange software will bring home from a late-night scoop around a public on-line bulletin board?

Buried in *The Weekly World News* story are some words of wisdom about on-line behavior from Dr. Mark Fordland, the man who reportedly treated the Pennsylvania programmer in-



of the personal data stored in the gray matter, now would we?

Security experts agree that the problem of computer viruses starts with the sharing of programs and too much free interaction across networks. Who knows what a computer with a wandering eye and a penchant

fected with the computer virus.

Borrowing software programs from friends and strangers is high-risk behavior, Fordland warned. When you borrow someone's software program, you're connected to everyone who has ever used that program."



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# SYSTEMS & SOFTWARE

## SOFTWARE SHORTS Compiler serves OSF

The Open Software Foundation (OSF) has chosen TDF technology, a compiler intermediate language from the Electronics Division of the Defense Research Agency in the UK, to serve as the core technology of the OSF Architecture-Neutral Distribution Format (ANDF). By providing a hardware-independent software, ANDF facilitates the creation of highly portable, high-performance application software for the open systems marketplace. The initial release of the ANDF core technology will support ANSI C, PASC and XPG3.

Tandem Computers, Inc. and Progress Software Corp. have announced that Progress will provide software for the Tandem Integrity 32, an AT&T-based fault-tolerant system. The Progress fourth-generation language and relational database management system is used to create high-performance transaction-processing applications. More than 2,000 applications based on Progress are commercially available for the government and the business and manufacturing industries.

## DECtp helps build Mormon database

BY MARTYN JOHNSON  
CWT STAFF

SALT LAKE CITY — Of all their worldly goods, information ranks among the most precious to members of the Church of Jesus Christ of Latter-day Saints, whose vast collection of genealogical records have made them the world's largest consumers of microfilm and microfiche.

Now a beta-test user of new Digital Equipment Corp. software, which delivers transaction processing capabilities to MS-DOS desktop computers, the Mormon Church's information systems department hopes to extend user access to historical records and save money in the process.

The church, with 7.5 million members worldwide and an expanding network of nearly 70

VAXs, is one of a handful of early users of DECtp Desktop for ACMS, which stands for Application Control and Management System (see chart).

"Desktop for ACMS will enable us to use PCs instead of terminals to access applications on

the big VAXs, so we can offload those more expensive cycles and get more user capacity as well," said Dave McRae, a development manager for the church.

"What is really attractive to us is the ability to sit at a PC and call up part of the historical data-

### Desktop tool

**DECtp Desktop for ACMS (Application Control and Management System)** has the following features:

- Layered software product that enables users of Apple Computer, Inc. Macintoshes and PCs with MS-DOS and Microsoft Corp.'s Windows 3.0 to access commercial transaction processing applications on a multivendor network.
- Will eventually support Unix and VMS on desktop machines.
- Available now, priced at \$245 per client license.

Increases user capacity and saves money by offloading work from larger VAXs to PCs, according to beta-test user, Church of Jesus Christ of Latter-day Saints in Salt Lake City.

CWT Chart: CHARTS, CWT

base or summon other applications from other departments within the church," added Larry Yurth, a technology analyst in charge of Desktop for ACMS development for the church. The layered software product lets application programs running on MS-DOS, Apple Computer, Inc. Macintoshes or Microsoft Corp.'s Windows 3.0 access ACMS applications via a built-in desktop-programming interface.

The Mormon Church is working with DEC on a joint client/server project, designing applications under ACMS that will make it possible to distribute its massive historical database and other information on the church's multivendor computer network. The project's main task is to establish better ways to track and then automate

*Continued on page 40*

## Application builder reaches user sites

BY ROSEMARY HAMILTON  
CWT STAFF

AI Corp. began shipping an expert system environment that is designed to build cooperative systems among distributed and at least one beta-test site gives the system a thumbs-up.

London Life Insurance Co. in London, Ontario, is using Cooperative Processing for KBMS to develop a taxation expert system, said Terry Wood, the firm's manager of expert systems.

While Wood said the software is still in a test period, it has also "met our expectations."

The taxation system will be used by insurance representatives to provide expert tax advice. It will use a three-tiered architecture consisting of an IBM mainframe, a Digital Equipment Corp. VAX server and personal computers. The AI software was well-suited for this structure, Wood said, because it allows the systems components to be stored on different tiers.

The raw data and some intelligence is stored at the highest end, so the mainframe acts as a database server. The knowledge-based processing component resides on the workstation. The

VAX acts as a messenger between the database server and the workstation. It provides data to the workstation, where it can then be manipulated and used by the knowledge base.

### KBMS advantage

"One of the advantages with [knowledge-based management systems] is you put more intelligence at both sides," Wood said.

It will likely be another year before the taxation system is ready for a production environment, he said. In the meantime, Wood said, he plans to use Coop-

erative Processing for KBMS on some more simple projects that would require only two of the three platforms. He said he is also looking to apply the software to administrative applications.

The software was designed to allow customers to design applications that make the best use of each platform in their computing environment, according to the company. AI Corp. makes expert systems, knowledge bases, databases, DEC VAXs and PCs. Cooperative Processing for KBMS will be licensed based on the host platform. License fees will range from \$5,000 to \$37,000 for VAX platforms. The IBM mainframe license fee is \$37,000.

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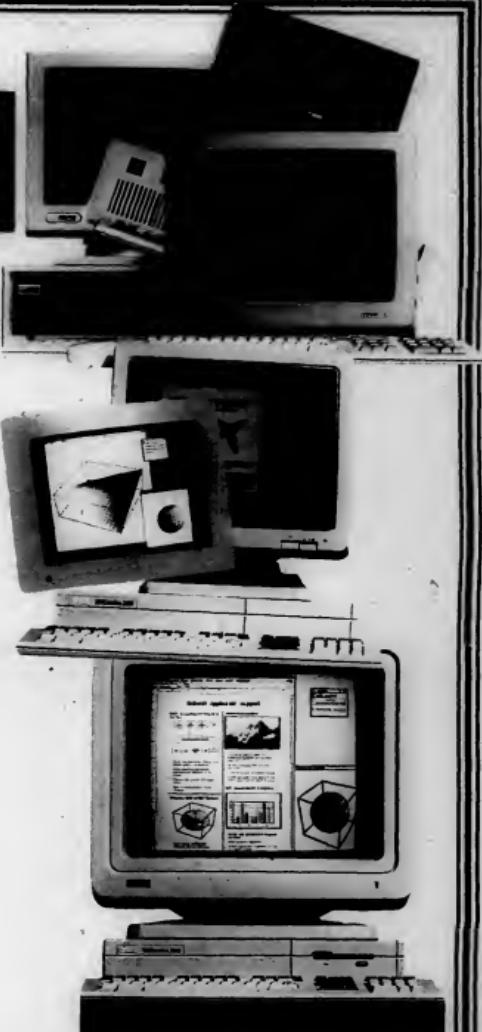
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The Usual Limits Don't Apply.

# Wall Street firms try shared technology

BY JOHANNA AMBROSIO  
CW STAFF

Some user organizations are discovering that it is better to hold back than to move forward on Wall Street, that is, in a spot of recent initiatives, securities firms are pooling resources to save money.

Among the cooperative efforts by securities firms that are just now getting off the ground are the following:

- A project to gather a broader range of quoting prices and other types of market data.
- A disaster recovery site with space for up to 1,000 traders.
- A joint venture of five firms that are combining and distributing their analytics libraries.
- An initiative involving a shared electronic data interchange network.

Another project gearing up is called the Securities Industry Network, which would help

firms standardize on modems and other telecommunications gear [CW, June 17]. John Compitello, chairman of the Telecommunications and Information Systems Committee of the Securities Industry Association (SIA), outlined the project during an SIA-sponsored conference held recently in New York.

The plan is said to be in its early stages, Compitello said, and IBM is conducting a requirements study.

"We'll know in the next four to five months whether it makes sense to proceed. It's gaining momentum and more momentum."

"Trading can be as cheap as one," by sharing in the common infrastructure costs, said George F. Adams Jr., a partner at Goldman, Sachs & Co. in New York. "We all have a lot of duplication and, very likely, significant overcapacity." Savings can range between 40% and 50% yearly, he added.

He suggested that companies

combine resources as they look to upgrade their computer systems for the 1990s. The past decade, Adam said, many securities firms had to rebuild their computer systems — as a

**T**WO OR THREE firms can get together and build a common core computing environment.

cost of between \$25 million and \$150 million — to go from batch to on-line and to accommodate longer trading days.

"We're now looking to overhaul again because of [local-area networks], Unix, OS/2, PS/2s" and other factors, he said. "And we're looking at another \$50 million to \$125 million to overhaul these brokerage and invest-

ment systems. It's not always the most popular visit to your management committee, to ask if they have an extra \$125 million around."

To reduce those costs, he asserted that the two or three securities firms can put together and build a common core computing environment and then look to other areas to differentiate and to gain competitive advantage.

Still, persuading companies that are fierce competitors to cooperate can be difficult. Some securities firms have been discussing joint ventures along these lines for two or three years, but so far, there have been no success," Adams said.

Yet the economic incentive remains a powerful one. Information technology expenditures account for 15% to 20% of securities firms' expenses, said Thornton D. Steiner, a partner at McKinsey & Co. in New York. At the same time, he said, the

number of employees at securities firms is coming down 2% to 3% each year.

While technology "is replacing work done by a broad section of people," and securities firms are getting more efficient, Steiner said, it remains unclear whether that efficiency is ever really transferred to the bottom line. In fact, new technology can be expensive, particular companies may see some savings over a short period, over the long term, information systems "reduce the aggregate profitability of the [securities] industry as a whole," he said.

What happens is that information technology creates significant capacity, he explained. But if the business volume does not keep up with capacity — as has happened in the securities industry — too many firms are trying for too few customers, even though they still retain the fixed costs of their computer systems. This leads to price wars, including reduced margins for everyone; and some competitors fall by the wayside.

## 4GL package puts info on-line for accounting staff

### ON SITE

BY SALLY CUSACK  
CW STAFF

PRINCETON, N.J. — Instead of struggling to find a file cabinet or running to find a particular person, the accounting staff at Merrill Lynch & Co. now just logs on wherever it needs information.

The staff calls up on-line screens created with a fourth-generation language (4GL) development package from Dan & Bradstreet Software, which delivers via personal computer from its host-based general ledger software system.

### Dubbed Systems Development Tool (SDT), the 4GL software is used to translate data from an 8-digit general ledger subsystem into a 16-digit system in an IBM 3090 MVS/XA environment.

#### Saving days

Using SDT to develop an on-line screen that would show the mapping structure for translation, "We've probably saved a couple of days" time for the accounting people," said Patricia Davis, department manager of financial systems at Merrill Lynch & Co.

"Now they just call up a screen. They don't have to look up the information in a book or wait for someone to be in work on a particular day," she added.

Merrill Lynch is using the SDT version of SDT, and the software integrates well with other DB2 Software programs, according to David.

Merrill Lynch originally purchased several Millennium accounting and financial software packages from McCormick & Dodge in the 1980s, including Fixed Assets, G/L, Accounts Payable and Purchase Order.

Operating in both IBM and Digital Equipment Corp. VAX environments, SDT allows users-defined applications to be defined on-line and in real time using a prototyping approach. Users define applications by crea-

ting database records for files, records, accounts, queries and search fields.

The SDT VSAM product modifies G/L screens on a individual basis, and it can write code behind the screens for error-checking and other intelligent capabilities, David said.

The firm has also purchased SDT DB2, a configuration of the software tailored specifically for the IBM DB2 relational database component.

"We are building a financial database that uses DB2, and we wanted to utilize the existing DB2 Software products," David said. "Using SDT, we have been able to query against the database."

Merrill Lynch realized a saving in implementing SDT because the company "didn't have

to retrain the accounting staff in a new software environment," David added.

More than 600 end users are currently capable of accessing information from the general ledger program. David indicated that when the DB2 financial database is complete, the company will be more restrictive with the number of people qualified to access the data.

The majority of end users access the database via IBM's Personal System/2 and Intel Corp.'s 80286-based PCs over leased lines. In addition to the DB2 Software products, the company relies on customized software for its budgeting and stock record applications.

For now, David said she is pleased with the capabilities of SDT, particularly its ease of use.

### NEW DEALS

## Unisys scores double

Despite the troubled economy both here and abroad, Unisys Corp. recently scored some hits in the worldwide sales arena. The Suncoast Schools Federal Credit Union in Tampa, Fla., has purchased a mainframe-based financial system from Unisys. The \$2 million contract calls for the installation of a Unisys A16 mainframe computer system and 100 Unisys Financial Systems Architecture (FSA) Finance workstations. Suncoast Schools Federal Credit Union is the 20th largest credit union in the U.S. with 100,000 members, \$650 million in assets and more than 113,000 transactions. On the international front, Bank International of Bulgaria has installed a Unisys A16 mainframe. An existing A series customer, the commercial banking institution is expanding its branch services through a network of 400 CTOS-based workstations running the Unisys PSA Finance branch automation software. The contract for the A16 was estimated at \$3.5 million.

The NASA Langley Research Center in Hampton, Va., recently took delivery on a Convex Computer Corp. custom supercomputer. The system will be used to support flight simulation research programs.

## Mumps establishes itself in the USSR

BY SALLY CUSACK  
CW STAFF

NEW ORLEANS — The Kremlin has Mumps.

The annual meeting of the Mumps Users Group had a different makeup last month, as the convention hosted first-time attendees from the Eastern Bloc countries.

Among the 1,800 users gathered from around the globe were representatives from the Soviet Union, Bulgaria and Czechoslovakia.

Mumps is a high-level language and database management system originally developed for the health care community by a technology team at Massachusetts General Hospital in Boston. The acronym

stands for Massachusetts General Hospital Utility Multi-Programming System.

There are some 1,000 installations of Mumps-Diams in the Soviet Union, said George Krutov, commercial director of the Soyus-Diams Association in the USSR.

Diams, the name Soviets use for the Diams Multi-System, runs on systems similar to Digital Equipment Corp.'s PDP-11 computers that are manufactured in the Eastern Bloc.

Mirroring its progress in the U.S., Mumps first appeared on the Soviet scene in the early 1970s and was initially used in

hospitals before branching out into other industries such as transportation and manufacturing.

The Soyus-Diams Association includes 155 organizations, most of which act as distributors of the software system. According to Krutov, the most prominent contract awarded to Mumps was for the Supreme Soviet of the USSR.

Allowing for the difficult economic times, Krutov said he anticipates modest growth for Diams installations in the near year.

The nonproprietary Mumps language and DBMS runs on a variety of platforms.

# Candle tools save storage space, money

BY JEAN S. BOZMAN  
CW STAFF

Beta-test site users of Candle Corp.'s DB2-DASD management product said the software tool maker's latest release, delivered to users earlier this year, enabled them to save precious space on their site's high-priced, high-end disk drives.

Burton Speed, a database administrator at The Williams Companies, a Tulsa, Okla.-based energy firm, said he expects to save more than \$12,000 in the first year of using the Candle tools. "We reduced the size of our DASD pool enough

to justify the expense of the product."

However, postponing new storage purchases was the more commonly cited benefit. His firm's four IBM DB2 relational database systems now pack their data into 25% less disk space than was used before, Speed estimated.

The Bank of Montreal is saving about 50% of the space formerly allocated to DB2 tables, said Terry Mason, who manages the use of database products at the bank's Toronto and Montreal offices.

"We run the program every few months, after the [new] DB2 applications are stable, so that we can slot the right amount

of disk space to them."

Candle's DB2-DASD Version 2, released earlier this year, works by showing users how much of the disk-drive space "allocated" to DB2 storage by database administrators is actually being used. The data on storage patterns is displayed on standard IBM 3270 screens, but pop-up windows, pull-down menus and color have been added to ease navigation through the program. Often, DB2 tables containing hundreds of empty rows are stored because of improper planning, longtime DB2 users said.

By following system prompts, users

can "alter" out normal storage patterns and find the inefficient ones. "We have many thousands of DB2 data sets," said Hank Ahlgren, manager of database administration at Levi Strauss & Co. in San Francisco. "This tool permits us to isolate the 50 to 60 tables that we'll want to change." Ahlgren said the software will show both the absolute amount of used disk space and the percentage of allocated space that is used to store data sets.

The Candle products are licensed from the small Houston firm of CDB Software, Inc., which sold a number of DB2 utility products under the name of CDB WorkBench since 1987. The Candle DB2 management software was licensed late 1990 from CDB Software, which remains an independent software vendor with about 15 employees. However, Candle now has the right of first refusal to distribute any new product CDB Software develops. The DB2-DASD Version 2 product is priced from \$10,000 to \$42,000, depending on maintenance configuration.

Reserving too much disk space for DB2 is one way that many database administrators cope with user pressure for uninterrupted data access. "Any time you're working with a database, you're looking at it from the outside, as if it were a big, black box," said Bill Stracko, a senior consultant at International Data Corp. in Framingham, Mass. "You can't see what the database is doing while it's operating. It's always going to be much easier to tie up another spindle [of the disk drive] than it is to tie up a couple of hundred users who are trying to access the database from the network."

Industry analysts said the \$151 million Candle is looking at the CDB Software products, sold through Candle's Database Tools Division, to help it compete with other IBM systems-software utilities firms.

## A supercomputer first is claimed

BY KIM S. NASH  
CW STAFF

RICHARDSON, Texas — Convex Computer Corp. recently claimed that it has developed the first real-time supercomputer.

Based on the company's C2 and C3 supercomputers, the new Preceptor 5500 series reportedly can run at up to 800 million floating-point operations per second (MFLOPS) and incorporates features such as internal real-time clocks, user-programmable interval timers and the ability to send timer output signals to users in response to events and computations inside the machine.

The Preceptor 5500, which is slated to ship this year, performs at 50 to 800 MFLOPS, with an I/O rate of up to 200M byte/sec. Prices start at \$495,000. The smaller Preceptor 5300, with a base price of \$349,000, can operate at 50 to 200 MFLOPS, with an I/O bandwidth of 80M byte/sec.; it is also scheduled to ship during the first quarter of 1992.

Convex also announced ConvexRTS, a new real-time multitasking operating system that includes four separate packages: a real-time kernel, a time-sharing Unit development environment, a system debugger and a performance analyzer.

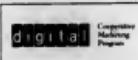
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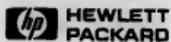
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## Insurance software introduced

*Enterprise Solutions adaptable to various applications*

BY ROSEMARY HAMILTON  
CW STAFF

AUSTIN, Texas — Continuum Co. has introduced a software series that takes a different approach to insurance applications than its previous lineup did.

Enterprise Solutions by Continuum is based on a set of modules of selected procedures and technologies that can be used across insurance application areas, according to Michael Long, Continuum's president.

When developing Enterprise Solu-

tions, Continuum's strategy called for identifying several processes that are common across different pockets in the insurance industry, such as life and property and casualty. These modules were then created to manage the generic operations across a company and to work in conjunction with a company's specific processes.

In addition, the Enterprise Solutions series includes a workstation platform module that will help customers set up a client/server structure to process applications.

The company also sells applications

that are targeted at specific segments in the insurance industry. The new series consists of several modules that can either replace certain functions in existing applications or provide the applications with new capabilities.

For example, one procedure module handles client management, which can be applied across the life insurance and property and casualty insurance groups within an insurance company. One technology module provides imaging capabilities that can be interfaced to existing Continuum applications.

The software is compatible with IBM's System Application Architecture (SAA) and IBM's evolving Insurance Application Architecture, an offshoot of SAA. Continuum is also an IBM business partner.

## Court computers may be seized if supplier fails

BY DON RADOLI  
SPECIAL TO CW

OSLO — It is rare that a bankruptcy court is directly affected by its own actions. But if Tinyringadata AS goes bust, it may take the computer systems in Norway's bankruptcy courts with it.

The firm is in the process of installing computer systems in all the country's courts, including the bankruptcy courts.

Tinyringadata, which last year lost \$9.3 million on revenue of \$5.7 million, badly needs an infusion of public funds. The snag is that the ultraconservative Progressive party is threatening to block the government's plan to pay \$38.2 million to invest in the financially plagued company.

The Progressive party's representative to the parliament's finance committee, Vidar Kleive, said he wants to defuse the firm's bankruptcy. That would lead to the seizure of all the computer equipment in the country's courts — including the bankruptcy courts.

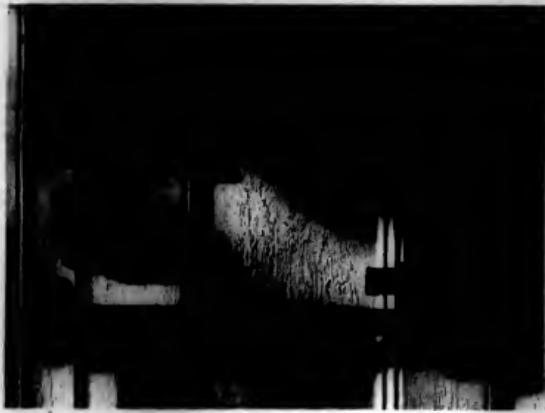
Tinyringadata is a systems integrator that is installing 175 NCR Corp. Tower minicomputers, an NCR System 3000 server and 1,300 workstations in the court system.

Tinyringadata President Per Christian Selmer said he is confident that the politicians have found a way to finance the company and that the company is safe through 1992.

The company has invested \$21.3 million in the conversion of land and property registration documents to a new computer-based system, Selmer claimed. The company's financial problems stem from the fact that the government still charges just \$12.20 for information from the land and property registry — the same price as before the costly conversion.

*Radoli writes for Computerworld Norge, an IDG publication.*

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COMPUTERWORLD

## New materials allow faster chip

OISO, Japan — IBM scientists have doubled a critical performance factor for the type of transistors widely used in memory chips and high-density logic chips, the company recently announced. The advance could lead to faster computer chips for laptop computers, personal computers and workstations.

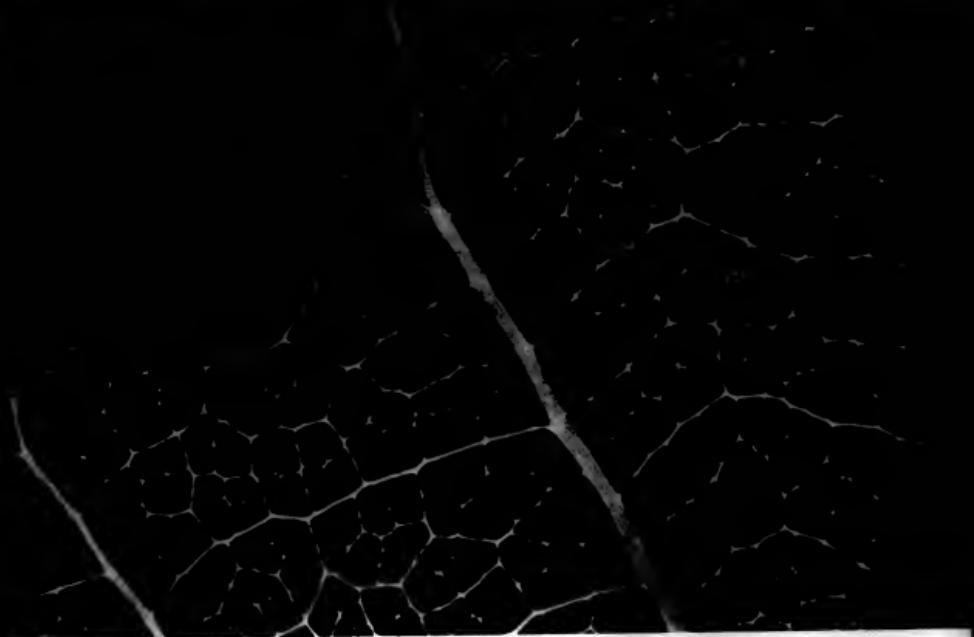
The tiny transistor, known as a "p-channel" metal oxide semiconductor field effect transistor (MOSFET), is less than one micron wide — a fraction of the width of a human hair.

The IBM researchers combined a novel design with new materials to build the experimental transistor, improving its performance with an ultra-thin channel of silicon-germanium alloy under the silicon surface of the Mosfet transistor.

The alloy helps reduce the scattering of the charge particles that carry electrical current through the device.



# Networking.



## Without fresh information

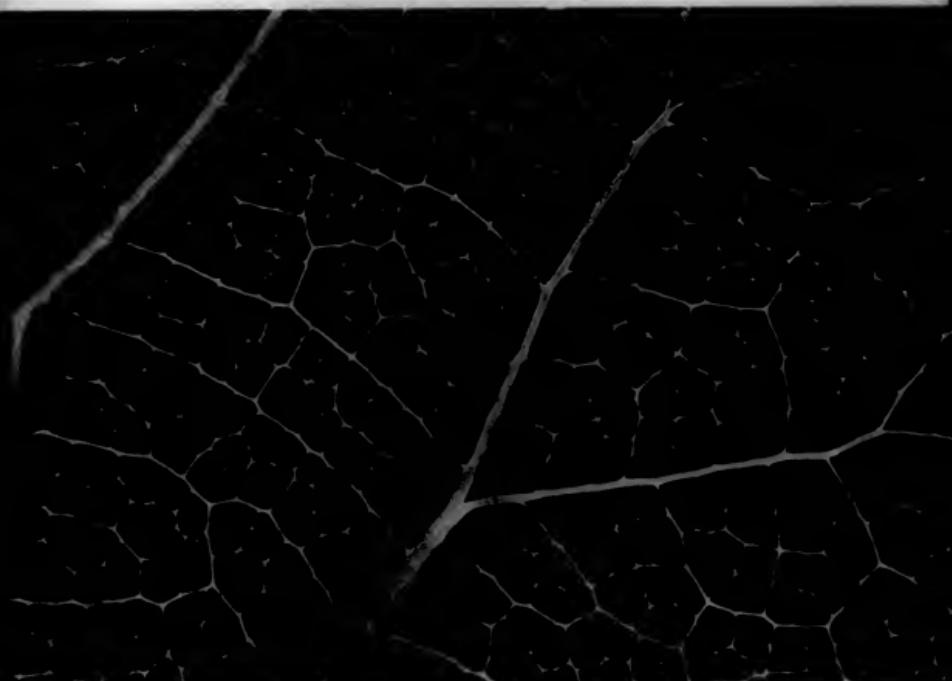
Some say "the network is the system," but we say your network is your *business*. In fact, without a good network you could be out of business.

Unfortunately, for too many companies, networking is not working. Or, not well enough.

Often it's because computer systems once chosen to solve problems are now causing them, because they can't communicate.

To pull things together takes a broad perspective, plus real knowledge of enterprise systems. Which makes IBM an ideal networking partner, especially since we're not just committed to open, multivendor environments, we're delivering.

For example, we're now helping UCLA build



## on flowing freely, companies wither and die.

a campus-wide network that will connect 15,000 people using Apple, DEC and IBM systems, tied together by TCP/IP and SNA protocols.

We're also a leader in OSI, with OSI offerings across all IBM platforms. And our SNA networks are open to a wide variety of non-IBM systems.

What's more, IBM's network management systems are the industry's most robust, which is why Santa Fe Railway is using IBM NetView® for automating operations and to control not just their LANs but costs as well.

You can also tie into the IBM Information Network for worldwide communications with customers and suppliers. And you can use voice-

enhanced solutions like IBM CallPath™ to greatly improve customer service.

But technology aside, the point is to get information flowing more freely around your company. And it's no longer just a good idea, it's an absolute business imperative.

Networking shouldn't be done piecemeal; you have to consider all the pieces at once—no matter who made them—and IBM has the resources for helping you do that.

To learn more about IBM networking, talk with your IBM marketing rep. Or to have one call you, call us at 1 800 IBM-6676, ext. 880.

## Mormon

CONTINUED FROM PAGE 27

historical data — now stored on microfilm or fiche — about the church's organization at the local and regional levels.

"We are trying to create a development environment that responds to the needs of the church, and we really want to develop systems that preserve our investment," Yurth said. "We believe client/server technology promises fairly scalable systems, so we can build small and grow larger, without a lot of application rewrite."

For users, he likes the project's end result to a Times wiz: "So easy to use, because all the complexity is under the facade."

While the church has come to rely on VAXs more heavily over the past six years, an Andahl Corp. mainframe is still the main processor for financial, accounting and research needs at the church's main genealogical library, the Family History Center here. A DEC Vancouver may eventually take over Andahl's role as the

**D**ESKTOP FOR ACMS will enable us to use PCs instead of terminals to access applications on the big VAXs, so we can offload those more expensive cycles and get more user capacity as well."

DAVID MCRAE  
MORMON CHURCH

church unifies its computing environment over the next five years, but Yurth said no final decisions had been made.

Last year, the Mormons began distributing CD-ROM discs — spun off of the mainframe database — to their 1,100 family history centers in the U.S. The discs include the *Family History Library Catalog* and the *International Genealogical Index*, which has data on more than 150 million Mormons and their ancestors. Also available is an *Ancestral File*, which collects and links the lineages of more than 6 million people.

Peter Schay, an analyst at Gartner Group, Inc. in Stamford, Conn., said Desktop for ACMS is ready "just the tip of the iceberg" in DEC's unfolding strategy for client/server computing.

"Putting Decforms on the PC is where DEC is really going," Schay said, explaining that Decforms is a screen formatting package for on-line transaction processing. "It does the layout of forms on the screens, the fill-in-the-blank stuff that takes a lot of expensive VAX cycles today."

Corporate users of ACMS are also watching the product with interest, particularly because DEC is promising to move the next major release of the desktop version to VMS workstations and Unix-based platforms.

"We would like to be in a situation where a user who needs more than a dumb terminal could offload ACMS applications from the VAXs onto workstations," said Ingvar Peterson, chief information officer at McCaw Cellular Communications, Inc. in Kirkland, Wash.

## EIS gains European following

BY SALLY CUSACK  
CW STAFF

AMSTERDAM — Executive information systems (EIS) technology is garnering strong interest among European computer users, according to reports from the annual SAS Institute, Inc.'s European User Group meeting, held here recently.

More than 700 users attended the conference, representing the banking, insurance, government, manufacturing and pharmaceuticals industries.

Hannes Hilmarsson, manager of statistical information at Iceland Air, said the airline sent representatives to the show

to gather information on EIS options and graphics capabilities for the SAS application development systems software.

Iceland Air currently uses SAS for OS/2 to extract monthly demographic sales figures from its IBM mainframe; it then compiles the data into monthly reports.

### Flying high for the airline

The SAS system would be a valuable tool for the airline, Hilmarsson said. The product features point-and-click technology and drill-down capabilities.

Originally previewed at the SAS User Group meeting in New Orleans last Feb-

ruary, the system was demonstrated for European users via dumb terminals on an IBM 3090 platform. The mainframe, also located in Cary, was linked to the conference by satellite.

Attendance was up 15% over last year, said Art Cooke, managing director of SAS Institute in Europe. He estimated that more than half of the attendees were using SAS in an IBM mainframe environment.

The SAS EIS system would most likely be competing directly with products from Comshare, Inc., Cook said. While SAS EIS for IBM mainframes and Digital Equipment Corp. VAX computers will be available in September, versions for OS/2 and Microsoft Corp. Windows platforms will be delivered by the end of the year.

ZenithPort 3000

The fully featured notebook that sets the standard for the Intel 386 SL microprocessor. Its Premier System Management — with two separate resume modes — lets you hold work in memory for days, or memory for weeks at a time.



**Utilities**

Systech, Inc. has entered the IBM mainframe software market with capacity and performance management packages for MVS, CICS and DB2 environments.

The On-Line Graphic Analyzer (OLGA) offers a graphical statistics display and real-time performance data for MVS, CICS and DB2. Real-time and recorded monitoring are included.

The Business Oriented Reports on Informatics Systems (BORIS) package creates bar graphs showing system workload evolution as well as service quality and resource use trends.

Pricing for OLGA and BORIS together ranges from \$12,240 to \$30,240, de-

pending on the processor group.  
Systech  
Suite 350  
205 Van Buren St.  
Herndon, Va. 22070  
(703) 834-8510

**Unix software**

Modern Office Systems Technology, Inc. (MOST) has announced Message Manager Release 2, an upgrade combining several Unix applications into a single package.

Message Manager provides dialog boxes, pop-up menus and paging windows on any standard character-based terminal. Intelligent Access offers controlled access to files and directories through a system of

dialog boxes. Another element of the package, Formagent, designs forms and includes data validation features.

Pricing ranges from \$695 for a personal computer version to \$2,495 on IBM's RISC System/6000. The product is available on other platforms including NCR Corp.'s Tower systems.

MOST  
6006-B Mechanicsville Pike  
Mechanicsville, Va. 23111  
(804) 730-1467

CEC Systems has announced a version of LaborLogic for the Unix operating system.

LaborLogic is an automatic labor scheduling software package. It analyzes sales forecasts, manpower requirements and employee availability data to generate ef-

ficient employee work schedules.

The product comprises a time/attendance module for payroll use and a scheduling module. Each module costs approximately \$1,000.

CEG Systems  
892 Worcester Road  
Wellesley, Mass. 02181  
(617) 431-7755

**HARDWARE****Data storage**

Memores Technologies has announced an 8mm helical scan cartridge tape subsystem for the low-end IBM Application System/400 market.

The Memores Tape 5411 is offered in 5Gb and 10Gb single-drive or 10Gb dual-drive models. A 1Mb-type data buffer is included. Sustained data transfer speed for the product is 500K bytes/sec.

According to the firm, the 5411 offers search speeds at up to 75 times the nominal tape speed.

The subsystem is priced at \$14,000.

Memores Technologies  
6929 N. Lakewood Ave.  
Tulsa, Okla. 74117  
(918) 627-1111

EMC Corp. has introduced new hard disk and tape backup systems for IBM's Application System/400 computers.

The EMC SL/936 models are direct-access storage device hard disk drives. The Model 10 has 16.8G-byte storage capacity and 8.7 msec average data access time. The Model 20 stores 34G bytes and offers 11.5 msec access time.

The Model 10 is priced at \$22,000; the Model 20 costs \$29,000.

EMC  
171 South St.  
Hopkinton, Mass. 01748  
(508) 435-1000

Gigantrend, Inc. has announced its Super Safed 4-mm tape drives for the IBM Application System/400.

The Super Safed line features proprietary Non-Stop streaming technology for increased speed, the company reported. Storage capacity for the line is 5G bytes/4-mm cassette.

Installation is plug-and-play on all AS/400 models. The product uses standard commands under the AS/400 operating system.

Super Safed pricing begins at \$15,950.

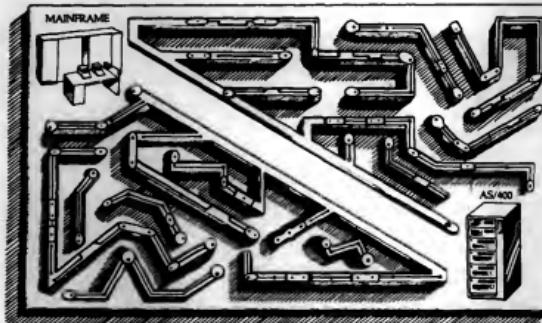
Gigantrend  
2234 Rutherford Road  
Carlsbad, Calif. 92008  
(619) 931-9122

Megatape Corp. has announced the Megatape 3486, a tape drive subsystem for VAX/11 bus-based systems.

The 3486 is compatible with IBM 3486 systems and offers 1.1G and 2.2G-byte storage models with cassette stacks. The 3486 can read data at rates up to 2.2G bytes/sec, it attaches to the VAX/11 bus via Megatape's MBII-102 tape coupler, which also connects 4mm and 8mm backup tape drives.

A single-drive 3486 with 2.2G bytes available storage costs \$35,950.

Megatape  
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And it's also designed for IBM® NETBIOS, Novell®'s IPX/SPX protocol\* and AppleTalk®.

And by supporting multiple platforms on your LAN, IRMALAN/EP eliminates the need to purchase more than one gateway. That's a cost savings that puts it far above anything offered by the competition.

But that's not all. IRMALAN/EP comes with RamXpander,™ our memory manager that allows fully featured emulation in less than 40K of resident memory.

Plus, our unique server licensing also makes it one of the most cost-effective gateways available. That's because we base the price on how many users on the LAN need to access the mainframe at once. So you only pay for the access you need, choosing from 8, 32, 64, or 128 concurrent users.

With this single gateway, you can now support DOS, Mac and Windows clients.

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So now that there's only one gateway decision, just call DCA at 1-800-348-DCA-1, ext. 70E, to receive free information with further details on connecting your mixed LAN environments to the mainframe.

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DCA

IRMALAN/EP  
Gateway Server

DCA



With IRMALAN/EP, 3270 gateway, you can support DOS, Mac and Windows clients with a single gateway.

3270 connectivity (IRMA™ WorkStation for Windows), we've developed IRMALAN/EP as the single superior gateway solution.

With this single gateway, you can now support DOS, Mac and Windows clients.

\*Windows client software is not yet available for the Novell IPX/SPX protocol. ©1991 Digital Communications Associates, Inc. All rights reserved. DCA is a registered trademark and IRMALAN, MacIRMALAN, IRMA, and Workstation are trademarks of Digital Communications Associates, Inc. All other brand and product names are trademarks or registered trademarks of their respective owner.

# The Ultimate Fusion Of Capacity And Speed

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# PCs & WORKSTATIONS

## COMMENTARY

Patricia Keefe

### Rumor mill vacation?

**What dog days of summer?** The summer rumor mill is just cranking out new products and sappy responders at every turn, and it looks like PC Expo will only accelerate the noise level.

The big buzz, of course, is the reportedly pending alliance between IBM and Apple. This duo will never be mistaken for two peas in a pod. Nonetheless, industry observers are all equivocating over what this could mean for them in the long term and what it would mean for IBM and Microsoft in the short term.

The conventional wisdom says that any remaining shreds of civility and appearance of a partnership will cease to exist. An alliance with Apple, they say, will be the silver bullet that finishes off the tattered IBM/Microsoft relationship.

We won't mention any names. Without wasting any time, Microsoft Chairman Bill Gates addressed the podium on the last DOS user group, which several thinly veiled shots at development partner IBM during a speech that emphasized quality control and stick-to-itiveness. Gates said he has learned a new operating system "must be

*Continued on page 54*

## DOS 5.0 takes on memory managers

BY PATRICIA KEEFE  
CW STAFF

Frustrated DOS users have spent years struggling to wring more random-access memory out of the cramped 640K-byte confines of Microsoft Corp.'s popular operating system. Until two weeks ago, their only recourse was a third-party memory expander or extender. There is now another option — DOS 5.0.

The much heralded and recently released DOS 5.0 is supposed to alleviate the memory crunch, but to what extent seems to depend on the system on which it runs. As such, the jury is still out on what this means for third-party providers of memory expanders and extenders, but early indications do not bode well for these vendors.

The stock line from Microsoft and third parties such as Quantum Corp., maker of 386Max!, is that although DOS 5.0 provides some relief from RAM cramps, it will not put third parties out of business. Instead, users can expect their memory extenders and providers to expand the level of services and value that they provide.

When these next-generation improvements will appear is not clear. Some micro managers, meanwhile, have already made the determination that all or most of their systems will be able to shed their memory pack-offs after migrating to DOS 5.0.

"My overall feeling is that people will flock to DOS 5.0 for one reason: RAM cram," said Julian Horwitz, executive director

of the Corporate Association for Microcomputer Professionals (CAMP) in Northbrook, Ill., after attending a CAMP meeting where several beta-test users discussed their experiences with DOS 5.0.

"I don't need third-party utilities anymore," said David Blumenthal, a spokesman for the New York PC Users Group, explaining that DOS 5.0's built-in memory-management feature allows users to load many programs into high memory.

"I don't know when I've been able to say I had 623K free of conventional memory," he said.

A predicted 'boon' Blumenthal predicted DOS 5.0 would be a "boon" to a lot of corporations because it will also enable them to dispose of old hardware that take up space on the hard disk.

The added lure of having one less package to worry about is very compelling to many of these accounts. This is because many

memory managers are difficult to install and use, claimed Michael Mazzoni, vice president for sales and marketing at V Communications, Inc., which markets a memory manager called Memory Commander.

Jude Gartland, a senior vice president at Lehman Brothers, Inc., said that most of his 500 users are running at least one memory enhancer, and he expects that almost all will strip their systems of that software.

*Continued on page 48*

## FEATURE: FOREIGN MARKETS

### Windows wide open in Japan

BY COMPUTERWORLD JAPAN STAFF

**M**icrosoft Corp.'s Windows 3.0 has gotten off to a good start in Japan. It was widely thought that the remarkable success of

Windows 3.0 in the U.S. would have some effect on the product's reception in Japan, but reality is turning out to exceed all expectations. Many uncertainties still exist in Japan, however — particularly the scope of Windows' acceptance by business — and it is still hard to tell just how big a hit it will eventually be.

Unlike the U.S. market, where Microsoft is the sole maker, several Japanese firms have licensed their own versions of Windows 3.0. By the end of April, NEC Corp., Fujitsu Ltd.,

IBM Japan Ltd., Toshiba Corp., Seiko Epson Corp., Mitsubishi Electric Corp. and Sony Corp. had all released their versions of Windows 3.0, some to strong sales.

However, the primary users so far seem to be personal users, although we haven't yet completed a detailed analysis. Reactions from large business users have been favorable, though, and it appears that many have started looking into adapting the product," said Kazuhiko Tomita, general manager of the personal computer sales promotion division at NEC.

"Windows is mainly for personal use. When businesses do use it, it's external to their main system," said Tatsuo Miyawaya, director of PC operations at IBM Japan, which is strong with large business users. Only Fujitsu, which is shipping Windows 3.0 exclusively for

*Continued on page 50*

## JULY 1991

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

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December 11, 1990.\*

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# Client/server setup targets tracking maze

*CSX embarks on a three-year journey to rein in decentralized Mac environment with VAX 9000s*

## ON SITE

BY JAMES DALY  
CW STAFF

JACKSONVILLE, Fla. — How do you lose a locomotive? Try hacking your way through a labyrinthine tracking system sprawled in 21 data hubs across half the U.S., and suddenly, it would be no problem at all to misplaced some hardware or chugging steel and smoke.

Arthur Mason sought to know. As director of transportation systems development at CSX Technology, the IS unit of \$8 billion transportation giant CSX

Corp., Mason tries to keep track of nearly 150,000 locomotives and freight cars spread across 21 transportation centers from the Great Lakes to the Gulf of Mexico.

Although it was designed as an interlocking net, the web had degenerated, and each transportation site now acts as an independent island rather than part of a greater whole. A dispatcher sitting in Rock Mount, N.C., for example, might have a devil of a time trying to negotiate through the electrical maze and determine if a shipment of tractors has been waylaid in Birmingham, Ala.

"All the information was there somewhere if you were willing to figure it out," Mason said. The result, however, was a potentially disastrous, inefficient system for CSX Technology. "Sometimes we were caught in front of a crisis," Mason said.

Something seemed ready to give — but Mason was not about to let that happen. He's determined to rein in his decentralized Apple Computer, Inc. Macintosh desktop environment and return it to a centralized client/server setup based at the home office here.

The project will take three years to complete, but its payoff could be substantial. Each 1% improvement in locomotive utilization produces an \$8 million annual savings in fuel costs, Mason said.

Mason's logic is the best of two worlds: The Macintoshes provide an easy-to-understand graphical interface as well as local applications and increased user control. A two-unit Digital Equipment Corp. VAX 9000 cluster provides the arrangement's computational heart and offers high-volume throughput, scalability and access to transaction processing.

What the crossover might seem like a big move for most firms, CSX has a history of taking apart its infrastructure in the name of efficiency. Last year, the firm opened a \$22 million data center at headquarters, stocking the digs with \$70 million worth of new equipment, from mainframes to tape drives. CSX also recently finished in the *Computerworld Premier 100*, a ranking of the most effective users of IS.

## Virtual tracking

With the new locomotive tracking system, dispatchers are presented with a highly visual display that pulls together assorted maps and graphs as well as information on the various centers. Each transportation hub provides a running list of which trains have arrived and departed. Dispatchers have only to pull up a map of the network and click on a transportation hub to figure out which trains are sitting on the tracks and what they are carrying.

The goal, Mason said, is to deliver a single system image that covers the whole country.

"The amount of data we are gathering and how to have available consolidated so that the new system was simple," he said.

Follow-up needs will also be extrapolated from the data gathered at each site. Maintenance logs, car scheduling assignments and other optimization strategies will be forged to provide a

## Service calls

*CSX Technology customer support system planned will provide the company with one number to call 24 hours per day*

### What it will do

- Reduce personnel by 530 employees
- Consolidate Jacksonville, Fla., headquarters functions
- Relocate 21 Transportation Service Centers to Jacksonville
- Sharply improve customer service
- Provide ability to more effectively train employees
- Give a 24.38 return on investment

Source: CSX Technology  
CW Chart: Davies, J. John

five- to seven-week view of locomotive assignment needs, Mason said.

Mason has plans to extend the consolidation setup to other areas of the company, including the shipping and customer service departments. The customer service project, for instance, will replace a collection of scattered customer service centers with a single center here that offers one telephone number to call 24 hours per day. The efficiency program will reduce 530 employees, sharply improve customer service and provide the ability to more effectively train employees.

"We're boiling everything down," Mason said. "For the next few years, at least, less is going to mean a lot more."

## Braille-based portable PC unveiled

BY CHRISTOPHER LINQUIST  
CW STAFF

MOUNTAIN VIEW, Calif. — Telesensory, Inc. recently announced a portable computer designed for the visually impaired. The Braillemate can reportedly fit in a coat pocket and can be used as a calculator, notebook, clock, address book, calendar or telephone book.

The 1-pound computer consists of a speech synthesizer, an electronic braille cell, a braille keyboard and 100K bytes of internal memory, plus enough for approximately 128 Braille pages. A slot for external 64K-, 128K- and 512K-byte memory cards to increase storage is also included.

The computer can be used both in educational settings as a teaching tool and as a truly portable computer for taking notes in meetings or while on trips, according to the company.

Power is supplied by either a

rechargeable battery pack or AC outlet.

As a user types in information, the Braillemate speech synthesizer converts the help input mistakes. Grade 2 braille can be automatically translated to text for printing.

The Braillemate can also be

attached to Telesensory's Navigator braille display, which supports a 20-, 40- or 80-character braille frame and can be attached to either the Braillemate or an IBM Personal Computer or compatible.

The \$1,595 Braillemate is scheduled to begin shipping by the end of June.



Telesensory's Braillemate weighs 1 pound and features a speech synthesizer, an electronic braille cell and a braille keyboard.

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same way as the OS/2 Extended Edition 3270 emulator, including NEW-LINE and ENTER. SPF/2 even displays the same status indicators.

SPF/2 has features not available on the mainframe. For example, SPF/2 supports 48 PF keys, automatically adapts to the various OS/2 video modes (full-screen or text-window), and scrolls the text as you move the cursor. In addition, SPF/2 has virtually instantaneous response time,

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## MS-DOS 5.0 taught via video

BELLEVUE, Wash. — Just when it seems Microsoft Corp. may have run out of incentives and tools for migrating to MS-DOS 5.0, Microsoft University has introduced a training video for support personnel.

The course was developed in order to meet the needs of support engineers and anyone else who is responsible for installing and maintaining DOS 5.0 for a work group.

Upon completion of the course, students should be prepared to handle the following tasks:

- Install the MS-DOS 5.0 upgrade on

networked personal computers.

- Optimize systems to allow the best possible use of available memory and machine resources.

- Automate the installation for multiple machines on a network.

- Customize the MS-DOS 5.0 shell to meet their organization's needs.

- Show end users how they can take advantage of the new features of MS-DOS 5.0.

The video costs \$149 plus \$5 for shipping and handling and can be ordered from Microsoft University, MS-DOS 5.0 Video Course, 10700 Northgate Way, Bellevue, Wash. 98004-1447.

## Arche to announce 12 new models

FREMONT, Calif. — Personal computer maker Arche Technologies, Inc., is expected to announce at PC Expo New York this week its strategy to become a bigger player in the U.S. market.

Arche is set to introduce five new versions of its Legacy line of PCs and seven models of its new Master series. Both lines will feature PCs based on Intel Corp. chips ranging from a 20-MHz 80386 chip to a 33-MHz 486 and on Advanced Micro Devices, Inc.'s AMD 386DX-40 processor. AMD will also be using the 386DX-40, replacing Intel's recently announced 1486SX chip.

"We believe [the 486SX] is puff mar-

ketting, especially when the 40-MHz 386 is available," said Michael Brunone, director of communications at Arche. Brunone added that Arche cannot yet get significant quantities of the Intel chips, nor is the price as low as Intel has publicized.

The new Master series of machines will range in price from \$1,999 for a 386SX/20 to \$5,199 for a 33-MHz 1486 box. All Masters come standard with Microsoft Corp.'s DOS 5.0 and Windows 3.0.

The Legacy line will range from \$1,830 for a new, small-footprint 386SX/20 to \$4,595 for the tower version of the 486/33. The Master series will start at \$1,999 for a 386SX and top out at \$5,199 for a 486/33. Within the Master series, Intel 386DX machines will be upgradable to 486s. All 12 models are available immediately.

## DOS 5.0

**CONTINUED FROM PAGE 45**

With DOS 5.0, Microsoft is providing much of the breathing space usually available through specialized memory managers, Garland said. "I don't know if it is half or three-quarters [as much memory], but [the extra memory] is free, and it's less hassle," he added.

Actually, DOS 5.0 ensures that users have the full 640K bytes to play with. Some memory managers provide 730K bytes, while at least one, V Communications Inc., will stretch to 900K bytes.

Memory managers are the most likely to come up gasping for air. Kent Duke, an analyst at Pacific Gas & Electric Co. in San Francisco, said he expects his networked users to save 40K to 50K bytes of memory. That, he said, is sufficient to warrant tossing aside memory managers. "Probably a large percentage of our networked users can drop their memory extenders."

In a networked environment, the memory need provided by DOS 5.0 is "significant," said Bob Holmes, a computer technology research analyst at Southern California Gas Co. in Los Angeles.

Especially impacted are networked windows users, he said, adding they will gain more room in which to run their DOS applications. "If a network user on an Intel Corp. 80386 spent a full hour optimizing DOS 5.0, you could get well over 500K extra," Holmes claimed. Conversely, he estimated that running under the faster DOS 4.0 without "any special memory-management software to let me stuff software high," he'd wind up with almost 100K bytes.

The bottom line, some said, is that DOS 5.0 should be a concern to third-party providers of memory managers. "DOS 5.0 is really nibbling away at their effectiveness," Garland said.

Other users shrugged off DOS 5.0's improved memory-management features, saying that if you give users an extra couple 100K bytes of memory, they'll try and take one megabyte or more.

I think it will affect memory extenders a little bit, but not as much as people might expect," Holman said. In any case, he explained, in that there is still a lot of extra capacity in memory managers such as Quarterdeck Office Systems' Desqview that DOS 5.0 does not address.

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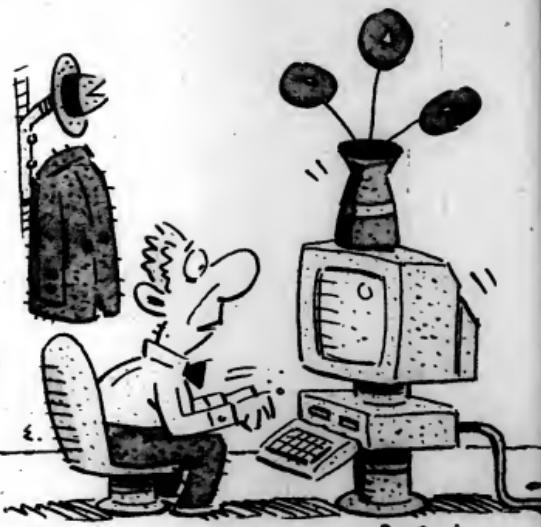
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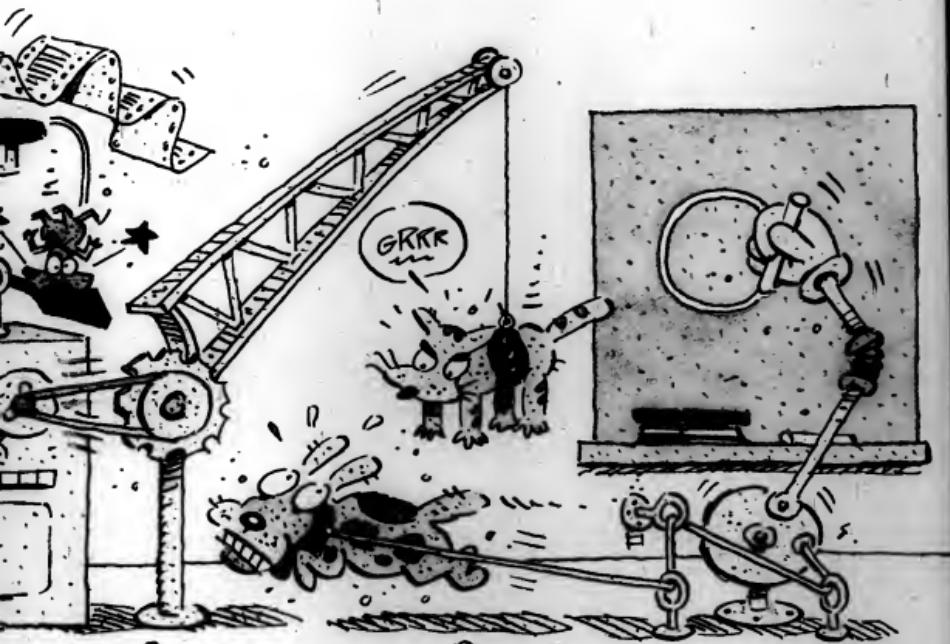
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# Multimate 4.0 dated despite added features

## Ashton-Tate Corp.'s Multimate Version 4.0

Review	Performance	Ease of use	Editing capability	Printer support	Network support	Documentation	Service and support	Value	Score
PC Magazine, 32/11/90	Slow, awkward	Flat-panel interface	Single-screen editing only	Weak	NC	NC	NC	Suitable for similar documents	64
Computerworld, 10/22/90	Fast						NC	Good	70
Users									
Software News, Software Marketing, Eddie Townsend, National Software Corp., Software Marketing	■	■	■	■	■	■	■	■	■
Analysts									
Computerworld, Deborah French Green, Steve Higgs, National Software Testing Laboratories, Inc.	■	■	■	■	■	■	■	■	■
Wiley Computer, Michael S. Karpman	■	■	■	■	■	■	■	■	■

Key: ■ Very good ■ Good ■ Fair ■ Poor

Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone survey.

\*AshtoWorld score based on 1 to 10 ratings. NC: No comment

**Technology Analysis** — A roundup of expert opinions about new products. Summary written by free-lance writer Suzanne Weisz.

**A**shton-Tate Corp.'s Multimate 4.0 was designed to simplify text entry and editing in the days when what was all a word processor was supposed to do. Since then, the package has been enhanced, with the current version offering graphical correspondence facilities that include a grammar checker and an electronic mail module. But reviewers reported that Multimate still lacks certain modern conveniences, such as style sheets and macro programming.

The package's outdated interface and the absence of sophisticated editing and formatting tools mark it as an antique, reviewers said.

**Performance:** Multimate is big and slow. Although the minimum memory requirement is only 384K bytes, users need 6.7M bytes of free disk space. The most useful facilities are comprehensive and transparent, but importing text into an existing file will be frustrating because the procedure will abort if there is more text than can fit on one page. There is a multilevel "undo" for deletes and backspaces, and the program writes pages to disk frequently, but it has no timed backup facility.

**Ease of use:** Reviewers said users of earlier versions of Multimate will be comfortable with the keystroke commands. The poorly integrated add-on modules, which use different menu systems, can be confusing, but for basic tasks, the interface is fairly straightforward. To format and print proportionally spaced documents, lengthy dialog boxes must be used. Reviewers said they found this and other interface conventions awkward and complex. On-line Help is minimal and not context sensitive. This is no mouse support.

**Editing capability:** According to reviewers, Multimate is useful for

### Vendor financial ratings

Analysts	Long-term stability	Short-term performance	Outlook
W. Christopher Martensen, Alex Brown & Sons, Inc.	■	■	Fair

W. Christopher Martensen, Alex Brown & Sons, Inc. Ashton-Tate Corp. reported net income of \$2.1 million for the first quarter of 1991, compared with a \$979,000 loss in 1990. Sales increased 10% to \$61.5 million, down 30% last year. Ratings are based on telephone survey of analysts who follow the company.

simple general correspondence only. Basic functions such as cutting and copying rectangular regions can be performed, but search and replace, formatting and layout features are weak. Users can only edit one page at a time, which means that when they insert text on a full page, the system does not automatically reform the document. Centering and justification can only be done on an entire docu-

ment. There are no windowing or split-screen capabilities, no support for style sheets or recorded styles, no outlining capability and only minimal graphics. On the plus side, Multimate has a powerful mail-merge facility, a spell checker and an elaborate grammar and style checker.

**Printer support:** One of Multimate's biggest problems, reviewers reported, is that it is still designed to print "pitched font" on dot matrix or daisywheel printers. The "Proportional Laser Print" add-on is supposed to handle proportional fonts on laser printers, but reviewers said it is hard to work and inflexible.

**Network support:** There is no remote access to files that are in use. However, group editing features are strong, including revision marking, document summaries, red-linking and annotations. Users can store configurations and dictionaries in their private directories.

**Documentation:** The documentation is clear but contains few examples. *InfoWorld* said.

**Service and support:** Basic technical support is free but not toll-free. Expanded service programs are available for fee.

While Multimate is best for handling a high volume of office correspondence or mass mailing that do not require special layout or sophisticated graphics. However, reviewers said, the program is out of date, and unless Ashton-Tate delivers soon on promises of an overhaul, even long-time users may do well to consider a change. Multimate 4.0 costs \$495.



**M**ULTIMATE IS FINE, as long as you don't want to do more than type a letter or get a memo out. It doesn't inhibit productivity, but it is very difficult to support."

Deborah Lerner  
PC Coordinator  
Swanson & Walker Co.

## Ashton-Tate responds

**Terry Smail, director of word processing:**

**Performance:** Multimate includes a lot of options that can be removed from the hard disk, such as the 50 conversion file formats. We plan to offer selective installation to save disk space. Additional modules that contain useful features will be more fully integrated in the next version, so performance will not appear slow.

**Ease of use:** For the next version, which we expect to release within a year, will offer a modern, industry-standard menu interface and an alternate default interface.

**Editing capabilities:** We will address some of the more significant layout issues in the next version. We will also add the ability to handle wide-page orientation. There will be a variety of tab leader characters to select from, and you will be able to sort whatever you want, including across pages.

**Printer support:** Once you learn how to fine-tune the "Proportional Laser Print," it provides outstanding quality.

## NEXT WEEK

► Lotus Development Corp.'s Ami Pro Version 1.2 is one of the easiest graphical user interface word processors to use, according to reviewers. It also offers strong editing and graphics capability.

## Windows

CONTINUED FROM PAGE 45

high-resolution applications at present, said it is seeing mostly business adoption of its product on a trial basis.

"Japanese businesses like to spend more time than their American counterparts studying something before it's adopted," said Hidetoshi Kawai, section manager of systems product planning at Microsoft. "I think the standard use of Windows 3.0 by businesses in Japan is still about a year away." The time for making changes will likely be the beginning of the

15,000," Tomita said. "Sales have run considerably over our initial projections, and we've been unable to keep up with orders even after increasing production." Early on, NEC doubled its initial sales target for the year from 100,000 to 200,000 packages.

Following NEC's lead, Fujitsu started shipping its Windows 3.0 at the end of February and had shipped 5,000 copies in the space of about one month. "Many of our users are businesses which take time to make decisions, but we've had numerous inquiries about Windows 3.0, and there is enormous user interest. Also, 5,000 copies in one month is quite a lot in comparison to past shipments of system software products," said Tatsuya Yashikawa, general manager of the marketing division at Fujitsu.

Like the other companies, IBM Japan said it cannot keep up with the orders. "We've never seen a start like this with any other software product," Maruyama said.

Most vendors agreed that the early surge of interest will spur development of Windows-compatible packages. "Development Plans for Japanese Language Microsoft Windows V. 3.0" and other existing MS-DOS resources were used with Windows 3.0 following the start of shipments in February, according to Fujitsu's report. By the end of the year, the key words will be "circulating applications for Windows 3.0" and "local-area network." Furthermore, the first half of next year should bring big business use incorporating on-line support, the report said.

fiscal year (next spring), be added.

Even without full business participation, there is no question about the product's strong initial showing. NEC led Japanese domestic vendors by starting shipments in mid-February; by mid-April, it had already shipped 45,000 and received orders for 60,000 copies. "These figures are really extraordinary, considering that sales of the previous versions, Windows 1.1 and 2.1, totaled only

HIDETOSHI KAWAI  
MICROSOFT

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 LEVEL5

## Last step is hardest

**W**hat kind of Windows 3.0 market expansion can Japan provide? Japanese vendors said they feel Windows growth in Japan will follow the same three-stage pattern as Windows acceptance did in the U.S. The first of these steps consisted of the three-month period immediately following the start of shipments last May. The same circumstances that NEC's Katsuichi Tomita noted in the U.S., with people using Windows to switch DOS applications by memorizing simple mouse operations. Trends in business saw those in charge of PC purchasing using Windows for the purpose of evaluating it, followed by gradual expansion of use within companies.

Stage two occurred during the latter half of last year, with the full-scale appearance of applications for Windows 3.0 and an increase in the number of users. Since Windows applications had more advanced functions than DOS applications did, users quickly bought two or three applications each, and the Windows 3.0 applications market expanded rapidly.

The third stage, which started this year, involves serious business use of Windows. According to Microsoft, extremely fast-paced penetration into the business user group is expected, and particularly strong growth will occur with the appearance of best-selling DOS applications such as Lotus Development Corp. 1-2-3 and WordPerfect Corp. for Windows 3.0.

"There is no question here that the next step for Windows 3.0 will occur due to increased applications. Our activities in this connection will be broken from this fall through the beginning of next year, and a year from now we expect to see over 150 Windows 3.0 applications," Tomita said.

Microsoft's Hidetoshi Kawai concurred, saying, "At this fall's Data Show, we expect to see applications made especially for Windows 3.0 and Windows 3.0 versions of best-selling DOS applications."

LAN applications will be key to business interest; NEC and Fujitsu consider them necessary if Windows 3.0 is to infiltrate the business user market. "Many obstacles exist to the widespread use of LAN, but it is generally recognized that Windows 3.0 is the optimum client environment for LANs. We should see the use of Windows 3.0 more and more as a prerequisite for future LAN environments," Tomita asserted.

"For us, full-scale business adoption of Windows 3.0 will be the point at which we make or break it. We are looking at two or three packages per business at present, but by the latter half of this year we will definitely see widespread business use. Windows 3.0's strength will be that it can be a multitask client environment for LAN," Yoshiakawa stated.

IBM Japan said it feels a little differently. While it is good to have more applications for Windows 3.0, that is not a necessary condition for its popularization. "Existing DOS applications can be used as

is, so I don't think users will feel inconvenienced. I think users will appreciate the functions they can get for 25,000 yen [the cost of Windows 3.0] and the Windows 3.0 market will definitely expand," Maruyama said.

Concerning full-scale introduction at the business user level, IBM Japan said it has its own ideas because it wants to keep the markets for Windows 3.0 and OS/2 separate. IBM Japan's Windows 3.0 supports 3270 emulation and can be used as a host terminal. "As a basic business applications platform, OS/2 is [still] the choice for high reliability," Maruyama said, stressing the difference between Windows 3.0 and OS/2.

On the question of realizing common applications in the future for OS/2 and Windows, Maruyama stressed the difference in target markets, saying, "Regardless of whether applications can be shared, OS/2 is still unique in that it provides an environment where customized applications can be developed."

### PC & WORKSTATION SHORTS

## Firms to distribute Mac tools

Rastman Kodak Co. and Radius, Inc. agreed earlier this month to co-distribute color management products for Apple Computer, Inc.'s Macintosh under both of their logos. Some of the products, which will combine Kodak and Radius color management technology, include a color-managing hardware transformation engine.

Beyond, Inc., a Cambridge, Mass.-based maker of networked electronic-mail software, announced a distribution agreement with Marconi and Ingram Micro D, Inc. Beyond just released eMail, an E-mail package for users of Lotus Development Corp.'s 1-2-3 and Symphony spreadsheet products.

Major computer vendors and resellers put \$1 million behind a campaign to enhance the image of the reseller channel, under the auspices of ABCD: The Microcomputer Industry Association.

The campaign is a one-year effort, which began at Comdex/Spring '91 to improve the image of the reseller channel.

Major components of the campaign include a study of end users at 100 companies by the Gallop Organization to gauge the end user's satisfaction with the channel.

The results will be put at the end of July. The rest of the campaign will focus on publicity and advertising on both a national and regional level.

# Geography challenges IS staff

ON SITE

BY MICHAEL FITZGERALD  
CW STAFF

**ANCHORAGE,** Alaska — Two to three times per year, Arco Alaska, Inc.'s information systems department braces for sunspots, acts of God that will shut it down temporarily. They always

hit with plenty of advance warning, so their effects are minimal.

"People can actually tell you that there's going to be a power outage from 1:04 p.m. to 1:11 p.m. next Wednesday," said James Porter, manager of administrative services at Arco Alaska, a subsidiary of Los Angeles-based Atlantic Richfield Co. "It's quite easy to predict, and

we're very prepared for it."

The out-of-the-ordinary IS challenges presented to Arco Alaska — sunspots, birds and established vendor relationships — have become nearly routine for Porter and his staff of 175, which allows them to address the usual IS issues, such as intense deadlines on complex

projects or maintenance of a variety of vendors' machines.

Arco Alaska runs machines from many vendors and may mix several of them for its next IS project, a \$6 million to \$7 million investment in computer-aided design (CAD).

The project will involve more than 100 design engineers, according to Porter, who said it is CAD with three Ds since it will integrate design, drafting and documentation when complete.

The first step of the CADD system will be to automate some 500,000 existing engineering documents that detail Prudhoe Bay and Arctic Alaska's projects there.

"When it reaches its production state, we'll be able to hook drawings into request for quotes and send them into vendors, and we'll be able to use this system to combine drawings and material so we can look at a facility or a subassembly and do material trade-offs with that drawing," Porter said. "That'll be a major enhancement in our environment."

Porter's department is evaluating two "largely different" approaches for the CADD system up and running in 1992.

The relative cost of the mainframe vs. that of a large server environment is his main consideration, Porter added.

Porter said he plans to have the CADD system up and running in 1992. Eventually, the CADD system will hook into a project currently under way at Arco Alaska, an electronic data interchange (EDI) program (CW, Jan. 29, 1990).

Porter is currently in the middle of rolling out a plan to get 50 of Arco Alaska's suppliers to do EDI with it by year's end. At the moment, four suppliers do EDI with Arco. The goal is expected to be reached before the end of the year, according to Porter, in part because 30 of its vendors already use EDI, and 110 attended a conference Arco Alaska co-sponsored with IBM to outline the advantages of EDI.

## Software sales withstanding recession

BY RICHARD PASTORE  
CW STAFF

Contrary to many expectations, software sales in the U.S. have not felt the pinch of recession according to the Software Publishers Association's quarterly survey of 150 software vendors.

Released earlier this month, the survey showed North American software sales increased 18% to \$1.2 billion retail for the first quarter of 1991 vs. the corresponding quarter last year.

"For nearly a year, the software industry has been bracing itself for recession that never materialized," SPA Director of

Research Ann Stephens said. The healthy growth shown that vendors were successfully tempting users with "cost-effective, innovative new software and upgrades."

A major sales driver in the packaged applications market continues to be Microsoft Corp.'s Windows 3.0. Windows-based products grew 221.6% in the quarter and now constitute 15% of North American sales, 19% of retail sales and 16% for the first time, passed Apple Computer, Inc. as the second largest software platform. DOS-based applications remain the largest-selling cate-

gory, growing 5.8% in the quarter. Apple Macintosh sales grew nearly 17%, according to the survey. OS/2 application sales were more than 100% but make up only about 2% of the market.

The education market grew at an unexpectedly healthy rate of 52.3%, followed by desktop publishing sales, which rose 50.3%. Word processing packages continue to be the largest software category, with \$233 million in quarterly sales.

International sales for U.S. software firms jumped 48%. Overall, domestic and international sales averaged a 28% gain over the like quarter in 1990.



**Arco's Porter:**  
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1350 Bayshore Highway  
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Burlingame, CA 94010  
415-340-1588, fax 415-340-1648



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# COMPUTING FROM DIGITAL.

WINDOWS IS A TRADEMARK OF MICROSOFT CORPORATION. 486 AND 386 ARE TRADEMARKS OF INTEL CORP.

**Keefe**

CONTINUED FROM PAGE 45

competition" to get people to switch. They also need "a direct test" to make sure their applications work, such as Flight Simulator has functioned.

That said, DOS 2.0's introduction was a piece of cake compared with Microsoft's experience with DOS 4.0. Migration to DOS 4.0 didn't go as well, according to Gates, because "we didn't control the testing and development as directly as we should have."

Gates was alluding to IBM's decision to go ahead and release DOS 4.0 before many people thought it was ready. In particular, because of outdated memory

requirements, the market "quickly formed a negative opinion" that "marked it for all time," he added.

IBM can use for miles and miles. Afterwards, no sooner was Microsoft allowed to react to IBM's concurrent DOS announcement than a sudden wave strongly rocked the still-anchored boat before Vice President Steve Ballmer could respond. The timing broke up the crowd.

Send those cards and letters. Bob Carberry, vice president of systems at the Entry Systems Division in Somers, N.Y., took time out at the IBM low-end PC announcement two weeks ago to offer a very quick look at the 5-pound laptop (IBM

recently introduced in Japan). Basically, he opened and shut the compact black box just long enough to note the absence of a floppy drive.

It seems the Japanese can live without a floppy drive. IBM isn't on map of the U.S. market, Carberry said the laptop will not be introduced here until IBM determines U.S. customer requirements.

Pay no attention to that bit of information high up in the press release. IBM took pains two weeks ago to position itself as the first to announce products for Intel's 50-MHz 486 chip, noting it was the first to offer products based on the earliest version of the 486. Since Intel wasn't supposed to announce the chip until today, it looked a bit like IBM

was stealing some of Intel's thunder. Not so, IBM said. A hastily issued press release noted in IBM-speak that IBM's product announcement "was not intended to be a product announcement." The deal with Intel, it turns out, was that IBM could not provide price or delivery dates for its offering.

My DOS is better than your DOS. A war of words erupted last week after Digital Research, Inc. responded to the introduction of Microsoft's DOS 5.0 by releasing a technical comparison of DR DOS 5.0 and MS-DOS 5.0. Naturally, DR came out on top, and as you might expect, Microsoft's Brad Clegg, Microsoft's product line manager for DOS 5.0, blew a gasket. "This is no longer," claimed Clegg, "asking which DR1 can pick apart MS-DOS 5.0's task switcher when DR 5.0 doesn't have one."

The two companies also battled over whose product was easier to install, the better place to stick EMM386 and whether Microsoft offers a number of features that DR does. Microsoft says almost all of these will be available in a read-only memory-executable version, slated for release in early July. DR1 officials insist these features won't be there now, and neither is the ROM version.

DR1 President Dick Williams claims that DR DOS 5.0 is more compatible with Windows 3.0 than is MS-DOS 5.0. Asked how that could be since Microsoft is obsessed with Windows, which it developed, Williams suggested, "Perhaps we care more." Then Bill Gates?

## The IBM LaserPrinter.



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## LED printer for tabletop unveiled

BY CAROL HEDDEBRAND  
CP STAFF

Siemens Nixdorf Printing Systems, a joint venture between Siemens Nixdorf and Storage Technology Corp., has jumped onto the desktop with the introduction of an LED printer for the tabletop.

The 2030 LED Printing System represents the company's first attempt to crack into the personal computer printer market, according to company spokeswoman Susan Stover.

"Siemens has normally been in the 100 to 200-plus page/min. printer range—the big ones for your data center. This is addressing a whole different office environment," she said.

The printer comes in two models, both of which print at 24 pagemin./12 pages/min. double-sided, the company said.

The Model 1, which prints at 300 dot/in., offers Adobe Systems, Inc.'s Postscript emulation as well as Hewlett-Packard Co.'s page description language for the LaserJet.

The Model 2, a floor-standing model, offers compatibility with IBM's Advanced Function Printing and Intelligent Printer Data Stream functions. The Model 2 prints at 240 dot/in.

Networking options include Ethernet and Token Ring for Model 1 and communication compatibility with the IBM 3280 for the Model 2.

Prices for the printers ranges from \$19,800 for the Model 1 to \$36,000 for the Model 2.

## NEW PRODUCTS

**Systems**

Fujitsu Systems of America, Inc.'s Autote 3000, a 16-bit handheld computer, offers full AT/XT bus compatibility, the company has announced.

The 1.7-pound system (\$1,995), based on the Motorola, Inc. 68028 processor, runs standard personal computer applications and can upload and download data to a host via modems.

It runs on nickel-cadmium batteries for eight to 10 hours before recharging, according to the vendor.

Fujitsu Systems of America  
12670 High Bluff Drive  
San Diego, Calif. 92130  
(619) 481-4004



I Corp.'s lower systems run the Intel Corp. 486 chip at higher clock speeds

I Corp. has introduced personal computer systems based on the Intel Corp. 486 chip running at 42 MHz, 46 MHz and 50 MHz.

The I Corp. tower systems include 4M to 456M bytes of dynamic random-access memory for disc caching, allowing disc access speeds appropriate for the high processor speed, according to the firm. The computers also come with Winchester and rewritable optical disc drives, a high-performance 17-in. display with 300 dpi/in. effective resolution, built-in uninterrupted power supply and shock absorbers on the disc drives.

The 42-MHz model costs \$18,900; the 46-MHz version, \$21,900; and the 50-MHz version, \$25,900.

I Corp.  
Suite 395  
398 Columbus Ave.  
Boston, Mass. 02116  
(617) 262-4615

**Database management systems**

Mostly Mice Software, Inc. has announced products for adding mouse support to Ashton-Tate Corp. Data applications.

The Db Mouse Patch Toolkit, available for Data III Plus and Data IV, provides mouse support routines in pull-down menus and dialog data entry windows.

The Data IV Toolkit costs \$159.95. The Data III version costs \$119.95.

Mostly Mice Software  
125 Gates Ave.  
Montclair, N.J. 07042  
(201) 746-9256

**Software applications packages**

Zsoft Corp. has released Publisher's Paintbrush Version 2.0 for Microsoft's Windows 3.0 environment.

The upgrade allows users to retouch up to eight image files on screen at one time. Publisher's Paintbrush offers 24 predesigned special effects filters—including Blend, Equalize and Mosaic—and supports custom filters.

Tools for cloning images and creating three-dimensional effects and texture patterns are also provided. Up to 16.8 million colors and 256 gray shades are possible. The program costs \$495.

Zeefit  
Suite 100  
450 Franklin Road  
Marietta, Ga. 30067  
(404) 428-0006

Primavera Systems, Inc. has begun shipping Version 4.1 of the Primavera Project Planner.

The product integrates scheduling, resource allocation, cost control and presentation graphics modules. The company reported that Version 4.1 calculates schedules up to 10 times faster than pre-

vious releases. It also adds multiversion features such as simultaneous updating and record locking. It costs \$4,000.

Primavera Systems  
Two Bala Plaza  
Bala Cynwyd, Pa. 19004  
(215) 666-5339

RG Software Systems, Inc. has updated its i-Spy antivirus software.

Version 6.0 includes a memory-resident option that automatically inspects diskettes when first accessed in a drive. It also records the system's Memory Map, Partition Table and Boot Sector on the hard disk, comparing the recorded and current values and alerting the user to discrepancies.

*Continued on page 56*

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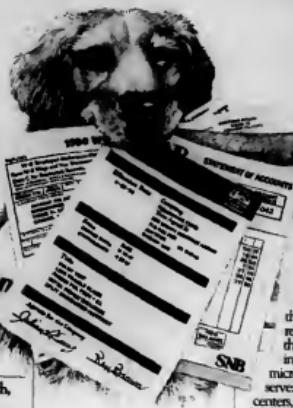
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Pechiney Road, N.W., Suite 170,  
Alpharetta, Georgia 30335. Or call  
404-262-2667.

THE IMAGE OF THE FUTURE  
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*Continued from page 55*

The \$250 price includes a year of free updates and full support.  
**RG Software Systems**  
 6900 E. Camelback Road #630  
 Scottsdale, Ariz. 85251  
 (602) 423-8000

### Board-level devices

Hercules Computer Technology, Inc. has announced production of its Superstation 3D, a real-time graphics accelerator board based on Intel Corp.'s 80386 processor and Texas Instruments, Inc.'s TMS34000 processor.

Superstation 3D offers 16.7 million displayable colors and a 72-Hz refresh rate. Resolution is 1,280 by 1,024 pixels.

Software drivers are included for the following: Autodesk, Inc.'s Autocad, 3D Studio and AutoShade and Microsoft Corp.'s Windows 3.0. The system is targeted at computer-aided design, three-dimensional rendering and multimedia applications.

The product costs from \$4,495 to \$5,995, depending on memory configuration.

**Hercules Computer Technology**  
 921 Parker St.  
 Berkeley, Calif. 94710  
 (415) 540-6000.

### Software utilities

Edco Services, Inc. has released the Letrtrk+ type editing package for Microsoft Corp.'s Windows 3.0.

The \$99 Letrtrk+ software utility enables users to modify output character pair spacing on-screen using a mouse. Kerned pairs can be translated from one font to another.

**Edco Services**  
 12410 N. Dale Mabry Highway  
 Tampa, Fla. 33618  
 (813) 962-7800

### Macintosh products

Supernic Technology has announced a series of digital-video products compatible with Apple Computer, Inc.'s QuickTime media integration system.

Included are the Videopage, a \$499 video-capture card for the Macintosh LC and II; the Videopage Pro, a \$1,899

card for large-screen, 24-bit video display; and Realtime, a digital-video editing software package bundled free with the hardware products.

According to the vendor, the products use image compression technology capable of putting 1,700MB bytes of data into less than 10MB of storage space.

**Supernic Technology**  
 485 Potrero Ave.  
 Sunnyvale, Calif. 94086  
 (408) 245-2202

**CMS Enhancements, Inc.** has created the Platinum PST500 streaming tape device for Apple Computer, Inc. Macintosh users.

The small computer systems interface subsystem offers 600MB-byte tape storage. It is currently shipping and costs \$1,999.

**CMS Enhancements**  
 2722 Michaelson Drive  
 Irvine, Calif. 92715  
 (714) 222-6000

### Data storage

Addstor, Inc. has announced Superior, a software product that increases available storage for personal computers.

Superior removes remnants from data on hard and floppy disk drives. The user is given the option to test and reduce file sizes by as much as 66%, according to Addstor.

The product costs \$129.

**Addstor**  
 3905 Bonhamon Drive  
 Menlo Park, Calif. 94025  
 (415) 688-0470

Core International, Inc. has announced 60MB- and 120MB-byte hard drive upgrades for IBM Personal System/2 personal computers.

The MC60 (\$1,299) offers an average seek time of 27 msec. The MC120 (\$1,949) averages 23 msec.

**Core International**  
 7171 N. Federal Highway  
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Computer Market Place, Inc. has announced the CAD Race VGA graphics card, a low-cost Video Graphics Array adapter that displays up to 800,000 colors simultaneously.

The product automatically fills in shading and blending effects and smooths jagged graphics edges, according to the company.

Autoboot software is included with the card to increase display performance under Autodesk, Inc.'s Autocad design software.

The CAD Race VGA card costs \$379.

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# NETWORKING

## COMMENTARY

Joanie M. Wexler

### Tangled in cable options

BY JOANIE M. WEXLER  
CW STAFF

If I were trying to construct a corporate network these days, I'd probably feel the IS equivalent of writer's cramp. The intertwined tangle of alternatives available at every first juncture — the cabling plant — is enough to paralyze eyeball glaze so symptomatic of technology overkill.

This is physical-layer networking we're talking about. Such lofty issues as which network operating system to install, the component "I" word (interoperability) and how to manage huge corporatewide networks — I can raise their heads to you decide which physical medium will connect all the darn equipment.

Gray hair No. 1: Today's spaghetti bowl of cabling choices hinges on several "if's" and "when's" surrounding such innovative technologies as 100Mbps bit/sec. data rates over copper and wireless local-area networks. Question marks include how closely the emerging products will jibe with the official standards under construction, timing of stampede production, viability vis-a-vis lower prices for fiber, intermodular distance limitations and security and reliability concerns.

The other part of the cabling equation is the degree of clarity we know that network planners have with respect to their future bandwidth needs.

Gray hair No. 2: Do you

*Continued on page 70*

## Bellcore spec nudges industry toward ISDN usage agreement

BY JOANIE M. WEXLER  
CW STAFF

The counterpart step to February's National ISDN-1 initiative took place earlier this month when Bell Communications Research, Inc. issued a document specifying how Integrated Services Digital Network (ISDN) terminal equipment should be designed to interoperate with standard office equipment.

The specification bumps the user community a notch closer to the industry-wide cooperation and infrastructure revamp needed for ISDN to widely kick in and offer big benefits to users.

In February, switch vendors AT&T, Siemens-Nixdorf and Northern Telecom, Inc. agreed

to design their telephone company switches to a common ISDN standard implementation slated to make them interoperable by mid-1992. The resulting interconnection has been dubbed the National ISDN-1 network.

This month's move by Bellcore — the research and development arm of the regional Bell operating companies (RBOC) — dictates how the equipment on user sites, such as personal computer terminals, chapters should be designed to play on National ISDN-1. The goal is to allow equipment on the user side to interface and match with any central office switch. Now, users must purchase equipment that specifically interfaces with the switch their telephone company's cen-

tre. HERE IS A large chunk of work to be done to bring National ISDN-1 into the 1992 time frame."

RICHARD T. ALOIA  
BELLCORE

trial offices happens to be using.

That limitation, plus the lack of interoperability between telephone company switches, has must purchase equipment that specifically interfaces with the switch their telephone company's cen-

ters lets users communicate with virtually anyone using dial-up voice, data and video services.

Richard T. Aloia, assistant vice president of network access technology at Bellcore, said that "there is a large chunk of work to be done to bring National ISDN-1 into the 1992 time frame."

The work, he said, requires the collaborative efforts of all industry players, including local and interexchange carriers, central office and user equipment vendors and users.

"ISDN has suffered too much from an 'if only' syndrome: if only there wasn't lack of RBOC deployment, if only there wasn't lack of RBOC-interchange carrier links, if only there wasn't a lack of industry leadership and application," National ISDN-1 means "we're going to stop chasing our tail."

Aloia said that upgrading the nation's telecommunications structure to ISDN includes not

*Continued on page 66*

## Wide-area net to link federal court system

### ON SITE

BY GARY H. ANTRES  
CW STAFF

WASHINGTON, D.C. — The federal judiciary has embarked on an ambitious project to link courthouses across the U.S., allowing judges and 26,000 other court employees to exchange electronic mail and files nearly instantaneously. According to prime contractor IBM, the Unisys-based network will be one of the largest centrally managed open systems networks in the world.

The network, really a collection of nets connected by modems, gateways and switches,

could encompass up to 2,000 small local-area networks, 150 large LANs and 14 E-mail nodes all connected to the government's nationwide communications backbone, Federal Telecommunications System 2000 (FTS-2000). The network will also tie together more than 15,000 existing DOS-based personal computers and terminals and 100 host mainframe computers from various sources.

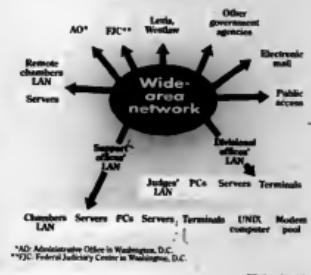
In January, the U.S. Courts awarded IBM's Federal Sector Division in Manassas, Va., a five-year systems integration contract worth \$25 million with options that could boost the total

*Continued on page 62*

### Going on line

Federal judges, their staff and the public will soon be using one of the largest centrally managed open systems networks in the world.

### JURIST NETWORK



CW Chart/Small Gossen

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## NETWORK SHORTS

**Network forum created**

U.S. and Canadian telecommunications firms have reportedly formed the Switched Digital Service Applications Forum in order to promote the development of switched digital products and services. The neophyte forum, which comprises carriers, equipment manufacturers and resellers from 60 organizations, announced that it aims to increase user awareness about applications and benefits available from switched digital services and to iron out equipment interoperability glitches.

The Kroger Foundation has reportedly awarded a \$500,000 grant to the Woods Hole Oceanographic Institute. The grant, which will be matched by the National

Science Foundation, will enable the institute to refurbish its research vessel, the *Knorr*. An upgrade of the *Knorr's* fiber-optic-based underway robotics system is planned. For example, a trawl winch system will be put into place to handle remotely operated vehicles, allowing a fiber-optic cable to transmit high-quality color images from the ocean floor to the surface and then by satellite to laboratories located around the world.

A \$30 million agreement between Secure Data Network, Inc. and Pacific Meridian Systems will reportedly allow Secure Data Network to provide unattended backup services for stand-alone personal computers or PC networks over the Integrated Services Digital Network (ISDN). The three-year agreement calls for Pacific Meridian Systems to provide the terminal adapters to link Secure Data Network equipment to the public ISDN network.

**Court system**

CONTINUED FROM PAGE 59

project to \$233 million over nine years. Subcontractor Computer Sciences Corp. will install, operate and maintain the network, and Artx Corp. will provide mini-computers for network control and management.

According to Pamela B. White, chief of the Integrated Technology Division of the U.S. Courts Administrative Office here, the 180 circuit, district and bankruptcy courts have traditionally operated as autonomous units, with judges having their own interests, concerns and ideas about office automation and communications. As a result, the courts tend to be islands of unstandardized automation, exchanging information by telephone, U.S. mail and fax.

"Now, for the first time, the judiciary will be linked together, allowing the sharing and exchange of information electronically," White said. "The information would be exchanged in any case; this will make it a lot faster and easier."

**One of three legs**

The data network is one leg of a triad called JURIST (for Judiciary Users Requirements for Integrated Systems Technology), which also includes data processing and office automation projects. Automation of the U.S. courts has become a pressing priority because of the exploding number of bankruptcy and probate cases and the general trend toward litigation. "Caseloads and the number of people handling cases are growing by leaps and bounds," White said.

Each judge will have a small — accommodating up to eight users — 10M bit/sec. Ethernet LAN with an IBM Personal System/2 Model 80 server running IBM's AIX implementation of Unix. Larger LANs with two servers and up to 32 users will be installed for each court's administrative offices. Multiple LANs in a building will be connected by a backbone that will attach to the PTS-2000 X.25 network via a gateway or switch. Users can choose PTS-2000 service ranging from 2.4K bit/sec. to 1.544M bit/sec.

There will be an E-mail node and a network control center for each of 12 regions and the administrative office.

Users will include judges, law clerks, staff attorneys and administrative personnel. They will exchange E-mail messages as well as files of financial, case-management and other administrative data. Users will have easy access to commercial information services such as Lexis and Westlaw.

**Custom software**

Nancy Vesper, manager of federal systems integration at IBM, said IBM will develop custom software for the user interface that will make it "easy to access network resources without coming into contact with DOS or AIX." Users will see a menu offering E-mail, file transfer, print services and access to local, remote-host and commercial applications, she said.

The public will have access to court data via a separate computer available by dial-up at each court. White said those computers may or may not be on the network, pending resolution of some security issues.

In any case, for user security, E-mail nodes and file servers will offer an encryption option via the federal Data Encryption Standard algorithm.

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# Britain, Europe open markets to competition

BY ELISABETH HORWITT  
CP STAFF

The ideal of trans-European, or even transglobal business networking services, has been taking on substance of late, with aggressive moves by overseas carriers to offer services to and within other countries.

Recently announced services take advantage of the slow but steadily loosening regulation against foreign competition by various overseas governments.

European countries that are members of the European Community have become more and more responsive to the European Commission's initiatives to open up its markets to competition, according to Leonard Eilenstein, president of research firm Lynn Technologies in Little Falls, N.J. "The [European Commission] has a growing clout, but it is not legislative or legal — rather, it is public pressure."

Great Britain effectively opened up its former two-carrier system to all comers earlier this year, becoming a test case for the concept of a fully competitive telecommunications market in Europe.

"England is now available to everyone irrespective of race, nationality or religion," said David Armitage, sales and marketing director for France Telecom's subsidiary Transpac SA. "So everyone is here: the Dutch, the Americans, the Japanese are looking around" for possible market niches.

Transpac, France's domestic packet-switching service company, made its own move into Britain earlier this month. The firm is building a network to offer X.25-

compliant packet-switching services in the UK — in direct competition with the UK's current packet-switching service from British Telecommunications PLC.

Transpac has a ready-made customer base in the UK because so many British firms already use the service to connect their French sites, Armitage said.

"BT [North America] generally welcomes competition, as long as it's fair competition," company spokesman John Mockridge said. "There is always the argument that we would like reciprocal agreements," which would, for example, allow BT North America to provide the same type of domestic service in France

that France Telecom proposes to offer in Britain, he added.

A French government official recently said that France sees no reason to end France Telecom's monopoly of domestic services.

Belgium's carrier, Regie des Télégraphes et Téléphones (RTT) recently introduced a satellite service that connects very small aperture terminal (VSAT) users in other countries to a hub in Belgium. In order to provide those links, however, RTT will have to negotiate with the individual European carriers to set up bilateral agreements in which either country can act as the hub for the other's satellite con-

nnections, according to Susan Mirbach, president of RTT-Belgian Telecom USA.

RTT's service will be operational by the end of the month, the carrier said. So far, RTT has finalized one such agreement with Germany's postal telephone and telegraph (PTT) authorities, Deutsche Bundespost.

Finalizing agreements between RTT and other European carriers may be "easier said than done," Eilenstein said. While PTTs say they allow VSAT services, most such services support domestic and/or one-way links, rather than two-way international connections, he added.

RTT also announced a direct videoconferencing connection between the U.S. and Belgium via U.S. Sprint Communications Co.'s Meeting Channel Service.

From the day of its introduction, UDS' V.32 modem has gathered honors from leading computer publications and other industry watchers.

Initially it set the standard for 9.6 kbps, full-duplex traffic over dial-up lines. When MNP level 5 data compression was added, throughput went to 19.2 kbps.

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For accurate communication over worst-case lines, the unit incorporates V.42 LAP-M and MNP 4 error control functions. A full complement of on-board test functions is included, and eight LEDs provide easy monitoring of the unit's operation and built-in diagnostic features.

Get acquainted with the latest winner in the UDS V.32 family. For the distributor nearest you, contact UDS at 800/451-2369 (in Alabama, 205/430-8000; FAX 205/430-8926).

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## UDS V.32 Modems: winners at 19.2 kbps—now FastTalk doubles the speed



## Data Switch adds Escon FX

BY KIM S. NASH  
CP STAFF

SHELTON, Conn. — Data Switch Corp. recently added a feature to its matrix switches and host network devices that lets users shuttle data from IBM mainframes with Escon fiber-optic architecture to IBM computers and peripherals based on the older bus-and-tag scheme that uses copper wiring.

Data Switch is marketing Escon FX as a bridging tool for users planning to migrate to IBM's Escon architecture, which IBM announced in September as part of its new Enterprise System/9000 mainframe line, expected to be delivered late this summer. Escon FX converts the serial fiber channel communication protocol to the parallel bus-and-tag protocol.

A bridging plan may be important to "companies that do not have the time or money to quickly convert their operations to Escon," said Roland Strohs, manager of systems engineering technology at Vienna, Va.-based Boeing Computer Services, which plans to test Escon FX.

However, bridging hardware is a sunk-cost, Strohs said. "Once you complete migration, it becomes throwaway hardware," he said. Escon FX upgrades for Data Switch's Model 2400 and 1800 matrix switches and Model 9088 and 9089 host networking devices are currently available for \$14,000 per channel.



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# American Express integrates network

*LAN-based scheme offers a cohesive database as well as independent functions for subsidiaries*

BY ELLIS ROCKER  
CW STAFF

**OMAHA** — When it came time for American Express Information Services Corp. (ISC) to restructure its unit of standard human resources and payroll systems at its nine operating units, it wanted a local-area network-based, decentralized scheme that still retained a core corporate database of its 9,000 employees.

"We needed the system to offer each operation the chance to be independent and do its own [human resources], payroll and benefits but send common demographics up to the corporate office," senior director of human resources Richard O'Gara explained.

Why an integrated system instead of a single-vendor solution?

The rationale was twofold, according to O'Gara. First, he contends, the best payroll, hu-

man resources and benefits packages come from different vendors.

Second, and more interestingly, the integrated approach fulfilled top management's instruction that "software could not stand in the way of an acquisition or divestiture," O'Gara said.

Ten and a half months later, at a software cost of \$2 million, the multi-vendor system, called HR Express, was up and running. At the same time, the company put into place new pension, 401(k) and flexible benefits plans for its employees.

Now the 22 organizations in the system, which uses Novell Inc.'s LANs, depends on a home-grown interface that automatically takes data from the unit systems and updates ISC's centralized human resources database.

The genesis of the integrated package was the 1989 overtax-

ing of a mainframe system, according to Kenneth Dick, director of MIS at ISC.

"It'd been set up for a business unit with just 5,000 people, so it was running 12,000," he said. Toward the end, he added, the horror of horrors was happening: Paychecks were getting fouled up.

Another problem in 1989 was that corporatewide data was nonexistent.

The Human Resources Information System rectified the failing with 102 data elements that are fed via electronic mail to the corporate system.

#### V.42 modems

The company uses 9.6K bit/sec. asynchronous lines for the E-mail transfers. According to Dick, the file transfers average 25K bit/sec. to 30K bit/sec. throughput, thanks to the use of V.42 modems.

The system uses IBM Per-

sonal System/2 Model 80s as servers and predominantly uses PS/2 555Xs equipped with math coprocessors at the desktop.

The largest LAN has 65 users; the smallest has two.

HR Express' ensures data integrity at the corporate level by not allowing changes to the core data, although it does contain software "hooks" that the larger business units can access to feed information into locally maintained subsystems.

A final benefit to the integrated LAN strategy is that it gives ISC's infrastructure in each unit to build on, O'Gara said.

Several vendors participated in the system development, including Control Data Corp., which supplied its Human Resources Management System and Signature Payroll Services, and SEC Systems Corp., with its 401(k) pension and flexible benefits program.

## Bellcore

FROM PAGE 59

only technology adjustments but also sweeping changes to fundamental carrier business practices, such as how customers order service and how billing and maintenance are handled.

Some procedural changes have been made, he said, by AT&T's 1984 divestiture, when competition fragmented any cohesive leadership in upgrading the U.S. telecommunications infrastructure.

The competing switch vendors made their February peace after an ISDN Executive Committee formed by the Corporation for Open Systems International stepped in and provided some executive-level leadership.

Bellcore and its seven telephone company owners will spearhead its equipment and applications ISDN forum in Washington, D.C., July 10-11 to educate industry players on keeping ISDN on its timetable.

National ISDN-2's release is slated for late 1993, Alois said. It will include enhancements such as on-demand "B" channel packet-switching. National ISDN-3 will be industry driven and will "plug the holes left by ISDN-1 and 2," he added.



Dick: Mainframe was overhauled



O'Gara: Infrastructure in each unit to build upon

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## ISDN pricing puzzle

**R**ichard T. Aloia, assistant vice president of network access technology at Bellcore, said that the RBOCs should begin filing National ISDN-1 tariffs during the second half of this year and that "the general feeling among RBOCs is that an ISDN line should cost about two times the price of POTS [plain old telephone service]."

While users will be getting multiple services over one line where they previously had to order several lines, one industry analyst said that such a pricing scheme "would mean that the RBOCs haven't learned their lesson."

Steve Sangeri, senior analyst at Datapoint, Inc., advocates ISDN tariffs at POTS rates or cheaper to simplify ISDN use. "The RBOCs are in no position to fiddle with pricing and alienate users," he said.

"They shouldn't try to make money on the access; they should get the price as close as possible and make money on the application. To a user, an access line is an access line. Users aren't going to invest in the premium equipment plus the extra transport costs unless they see a clear benefit."

Sangeri pointed to Japan, where ISDN access costs the same as POTS and is more expensive than in the U.S.

Both Sangeri and Bruce Rags, a consultant at the Center for Telecommunications and Information Studies at the Columbia University Business School, advocate contract ISDN pricing.

"The RBOCs have every incentive to upgrade to ISDN but are limited by the bottom line by having to file tariffs with the state public utility commissions," Rags said. He said he would like to see the RBOCs disengaged to relieve them from the catch-22 of having to justify tariff rates for services that can have no demand until they are available.

"Nobody is buying tariffed ISDN," Sangeri added. "They're only getting it through under-the-table contracts."

JOANIE M. WECKER

## Hard work made war network possible

BY GARY H. ANTHES  
CIVIL STAFF

**WASHINGTON, D.C.** — According to a panel of U.S. military officials, communications systems in the Persian Gulf war worked heroically but only because of the heroic efforts of those who scrambled to put them together and keep them running.

The officers speaking to a standing-room-only crowd at the Armed Forces Communications and Electronics Association convention here avoided direct criticism of the technology used in Operation Desert Storm, but their talk for future research and development offered some clues about things that may not have worked so well.

One officer called the Desert Storm communications infrastructure "the largest, most complex and dynamic deployment of communications systems in history."

On Aug. 2, 1990, when Iraq invaded Kuwait, there were two satellite terminals available to Allied forces within what was to become the theater of operations. By Jan. 17, 1991, there were 117 of the 8-ft antenna

moving 150,000 messages per day to and from four satellites.

Although the terminals could not operate when in movement, they had to be shifted constantly to meet the needs of moving forces. At the height of the war, there were 115 terminal moves in 100 hours, according to Air Force Brig. Gen. Roscoe Cougill, who was director of command, control, communications and computer systems at U.S. Central Command in Saudi Arabia. "We built the network, modified it and rebuilt it on a daily basis. We had a different network everyday," he said.

**First in line.** Nevertheless, Cougill described Desert Storm communications as "the first large-scale, completely interoperable, tactical message- and voice-switching system, [allowing communications] from the foxhole to national command authority."

Air Force Brig. Gen. Philip Bracher, Cougill's counterpart in Turkey, said there were not enough satellite terminals to support traffic demands. "Placement of the terminals had to be managed carefully. It was a management nightmare."

But apparently Yankee ingenuity won the day. One of Bracher's slides showed a soldier operating a receiver whose antenna had been augmented by barbed wire.

Bracher said U.S. military communication capacity in Turkey was increased 200% in just a few weeks, in part by laying "miles and miles" of fiber-optic cable and by borrowing or leasing added satellite capacity from Allied and commercial sources.

Several officers cautioned that the U.S. cannot always count on having six months to prepare for war. When asked how well communications and computer technology would have worked had the war started on Aug. 2, Cougill said, "How well would a three-wheeled car do without a motor?"

Navy Capt. Robert Brown, an intelligence specialist at the Defense Intelligence Agency, said the U.S. often underestimated the damage it had done to Iraqi assets. He called for better sensor and communications technology to do battle-damage assessment and quickly feed the results — by high-quality reconnaissance photographs, for example — to tactical commanders.

integrated support for UNIX UUCP, Kermit, Xmodem, and Ymodem protocols.

The T1600 also provides advanced password and callback security to prevent unauthorized access to your sensitive data.

You might think you'd pay a premium for this kind of performance, but actually the T1600 is very competitively priced at only \$795 (quantity one list price). That makes the T1600 the best V.32 value around.

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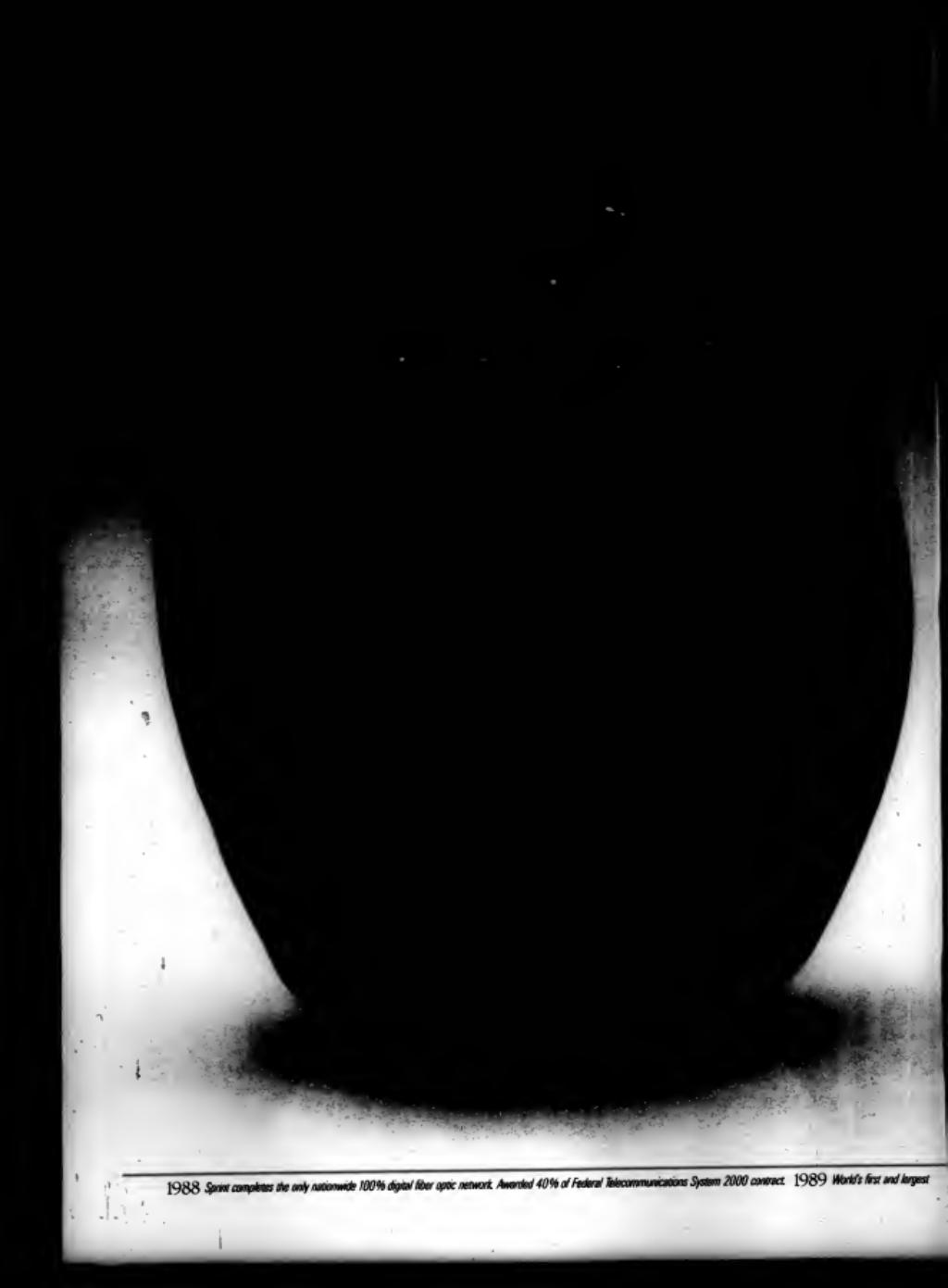


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environment, topology, and network operating system. With everything from private lines to the newest technology.



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## Wexler

CONTINUED FROM PAGE 59

face your company getting into bandwidth-gobbling imaging applications? Videoconferencing? Multimedia? In two years or five? Is 100M bit/sec. to the desktop important enough in the near term to rig up interim copper cabling ahead of standards and in place of fiber?

Many tout fiber as the ultimate conduit for your burgeoning bandwidth needs. However, fiber's current \$8,000-and-up per-seat price tag could break your budget bank if you run it all the way to the desktop. So vendors are putting the 100M bit/sec. speeds of Fiber Distributed Data Interconnect on copper wiring from backbone to desktop.

Gray hair No. 3: There are many kinds of copper. Witness the recent pledges of Digital Equipment Corp., Networks Peripherals, Inc. and others to roll out 100M bit/sec. interoperable network adapter cards and concentrator modules for shielded twisted-pair wiring starting in August. The products bring the 100M bit/sec. per-connection price to about \$5,200. A nice investment protection if that high-grade wire is already in your walls.

If it isn't, is it worth it to install what vendors agree will never surpass 100M bit/sec.? Perhaps. One user advised that "if you get five years out of any cabling plant, you're justified."

If you already have twisted pair in your walls, however, there's a 65% chance, according to market researcher In-Stat, Inc., that it's unshielded twisted pair, for which there are no announced products but for which a 100M bit/sec. standard is under construction.

Gray hair No. 4: If you have unshielded twisted pair, what kind do you have? There's still much debate about the technical feasibility of running 100M bit/sec. over unshielded. But most pundits agree that a high grade of unshielded twisted pair will certainly be required. Is yours a candidate?

If so, and if you believe the talk that there will be a standard for 100M bit/sec. over unshielded within 18 months (slated to run over shielded wiring as well), you have to determine whether your applications will allow you to wait, demand that you install shielded or bite the budgetary bullet and jump straight to fiber, whose bandwidth limits are restricted only by the speed of light.

Gray hair No. 5: Time to play economist. The copper alternatives to fiber are touted as competitors that will provide vendor incentive to drop fiber prices. However, could the copper products dilute the demand for fiber itself, prolonging the inflated fiber connection price? Consider the political election in which voters divided up among the Democratic and independent candidates usher the Republican into office.

For users overwhelmed by these wiring issues, there's always the emerging wireless LAN alternative. Wireless accommodates companies that do lots of adds and changes, because the medium — air — moves quickly and easily with the user.

Gray hair No. 6: If you embark on a wireless LAN technology, which one do you use: infrared, spread spectrum or microwave? Each has its advantages and pitfalls. There are a few security and health-hazard public relations issues to

overcome, but bandwidth-wise, wireless capacity is potentially as limitless as fiber, according to a Yankee Group analyst.

Gray hair No. 7: If you're in a rush for high speeds to the desktop — say you have a population of scientific users running network-munching modeling applications — you could probably justify a 100M fiber cabling plant. The rub is that the workstation will then become the bottleneck, because workstation processors aren't fast enough to keep up with 100M bit/sec. network throughput.

Ever wish for your childhood days when two paper cups with a string in the middle were the center of your high-tech world?

Reader is a Computerworld senior writer.

## NETWORK SHORTS

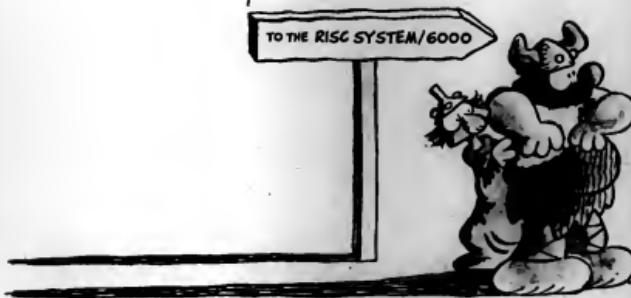
### BiCC, Datability join forces

BiCC Communications and Datability, Inc. have reportedly joined forces to integrate Datability's VCP terminal server architecture into BiCC's Ipsilon Ethernet Switches. Iepsilon is a structured wiring hub. BiCC, also a supplier in wireless LANs, announced that it has begun shipping its 4M bit/sec. Token Ring, infrared-based Infralink product to wiring systems supplier Axistor Bros., Inc.

Networking vendor Banyan Sys-

tems, Inc. last week announced that 10 Banyan channel partners have met criteria to become Banyan Premier Resellers of Banyan Virtual Networking System networks. Premier reseller requirements include two full-time certified Banyan engineers, a dedicated Banyan product manager and 24-hour customer service. Among the resellers that have met these and other criteria are Alliances Infonet/Velcom and Data Systems Network Corp.

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Stars cool. Volcanoes fizzle. Even suns burn out. But the IBM RISC System/6000™ family of POWERstations and POWERservers is not flash in the pan. In the year or so since we introduced it, it's only gotten hotter—offering performance ranging from 9 to 25 MFLOPS and from 33 to 72 SPECmarks. All at prices that won't even make you break into a sweat.

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	Hardware Price	MFLOPS	SPECmarks*
POWERserver 550	\$62,000	25.2	72.2
SPANserver™ 470	\$77,800	3.8	19.4
DECrypter™ 550	\$74,700	4	21.5

industry standards and programming languages, but brings you additional enhancements like enriched file system capabilities, support for advanced systems management and much more. Best of all, AIX fanq the flames of the RISC System/6000 family's POWER architecture, to give you even hotter performance.

MFLOPS and SPECmarks achieved when running AIX 3.1, FORTRESS Version 2.1 and AIX 3.2 C Version 11 compilers were used for these items. SPECmarks is a geometric mean of the ten SPEC CPUmark tests. All prices current as of publication. IBM and AIX are registered trademarks and RISC System/6000 is a trademark of International Business Machines Corporation. UNIX is a registered trademark of UNIX Systems Laboratories. SPANserver is a trademark of Sun Microsystems, Inc. DECrypter is a trademark of Digital Equipment Corporation. SPECmarks is a trademark of Standard Performance Evaluation Corporation. HAMMER THE HORRIBLE Characters © 1991 King Features Syndicate, Inc. © 1991 IBM Corp.

## NEW PRODUCTS

**Front ends, multiplexers**

Lemcom Systems, Inc. has introduced a configurable data communications platform for real-time processing and remote concentrator functions.

The DNP 9000 platform serves as a front end for Synchronous Data Link Control, Binary Synchronous Communications and ASCII terminals, supporting synchronous data transfers at 2.048M bit/sec. It offers an interactive console for network configuration, network status display and system diagnostics.

The DNP 9000 costs from \$25,000 to

\$80,000, depending on the number of protocols and communications lines supported.

**Lemcom Systems**  
2104 W. Peoria Ave.  
Phoenix, Ariz. 85029  
(602) 944-1543

**Network management**

Nyxex Corp. has released the Allink Operations Coordinator Sampler, a prepackaged integrated network management system.

According to Nyxex, the product is intended to help users determine the usefulness of a customized Allink manage-

ment solution. Users can integrate element management systems including IBM's Netview, Networks General Corp.'s Watchdog and any T1 or modem management system. It consolidates information from the element managers in a Unix workstation environment.

The Operations Coordinator Sampler is available on a rental basis for a non-recurring fee of approximately \$20,000 plus monthly fees of approximately \$12,000.

An fee paid can be applied toward the purchase of a customized Allink management package.

**Nyxex**  
1112 Westchester Ave.  
White Plains, N.Y. 10604  
(914) 644-7704

Digital Technology, Inc. has created a portability of its DTI Lanbank 5750 Network Analyzer.

The Lanbank 5751 monitors, filters and analyzes data on Fiber Distributed Data Interface networks in real time. It has a 20- by 22-in. footprint and is 8 in. tall.

The product costs from \$28,000 to \$50,000, depending on configuration.

**Digital Technology**  
2300 Edwin Moses Blvd.  
Dayton, Ohio 45408  
(513) 443-0412

**Customer premises equipment**

**Cylink's FT1 Network Integrator supports T1, E1 and ISDN networks**

A multiport channel service unit/data service module integrates cross-connection and security functions has been introduced by Cylink Corp.

The FT1 Network Integrator includes eight ports and interface modules for the following: T1, fractional T1, E1 and Integrated Services Digital Network Primary Rate Interface networks. Data transfer modules with rates of up to 1.544 Mbit/sec., in increments of 56K or 64K bit/sec., are supported.

Pricing ranges from \$4,000 to \$15,000, depending on configuration.

**Cylink**  
110 S. Wolfe Road  
San Jose, Calif. 95086  
(408) 733-5800

**Host-to-host**

Systems Center, Inc. has announced Network Datamover 400 (NDM-400), a software product for IBM Application System/400 to MVS mainframe communications.

NDM-400 automates data transfer functions and links to unattended applications, batch jobs and job schedulers. It also provides audit trails and statistical analysis for all activities. Data compression capability is included. NDM tasks can be directed through familiar interfaces.

The product is available immediately and costs from \$1,000 to \$12,000, depending on system size.

**Systems Center**  
1800 Alexander Bell Drive  
Reston, Va. 22091  
(703) 264-6000

Cti Systems, Inc. has introduced a programmable interface for connecting Motorola, Inc.'s VME workstations with supercomputer through Performance Parallel Interface (Hippie) ports.

The Hippie-VME Intelligent Interface Board (116,500) connects to 100M- and 200M-byte ports, supporting 38- and 64-bit data paths. Transfer protocols including Transmission Control Protocol/Internet Protocol and IP-3 are supported.

**Cti Systems**  
Suite 235  
5860 W. Las Posas Blvd.  
Pleasanton, Calif. 94566  
(415) 463-2322

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**Micro-to-host**

Go/ISDN, a software and hardware product connecting personal computers to IBM mainframe systems, has been announced by Trigemis, Inc.

The product offers 5250 and 3270 emulation to PC users over the Integrated Services Digital Network.

It emulates multiple displays and printers as well. Transmission speed is up to 64Kbit/sec.

Go/ISDN software costs \$895; the ISDN adapter card for PCs costs \$1,395.

**Trigemis**  
74 Northeastern Blvd.  
Nashua, NH 03062  
(603) 863-0558

**Local-area networking software**

PC DOCS, Inc. has released a new version of its Document Organization and Control System.

PC DOCS 4.0 manages an increased number of file formats, including popular spreadsheet and word processor files, and offers enhanced global network search facilities.

PC DOCS costs \$225 per workstation or \$295 with full text editing options.

**PC DOCS**  
Suite 203  
124 Marriott Drive  
Tallahassee, Fla. 32301  
(904) 943-3627

Trellis has produced Timetalk, its calendaring software package, for multiserver networks.

The server version divides processing between client and server systems for increased performance, the company reported.

Export features are enhanced, as are multiple printer setup options. The product is integrated with Bayyan Systems, Inc.'s Virtual Networking Software.

Licensing costs \$1,495 per server, with an unlimited number of users, according to the vendor.

**Trellis**  
85 Main St.  
Hopkinton, Mass. 01748  
(508) 435-3066

**Wide-area networking software**

Plantronics Futurecomms, Inc. has released Verification Host X-25, a public network access security system.

The Verification Host software runs on a host computer and provides a database of 3,000 user identification passwords and facilities for call and alarm tracking. Several user-definable parameters for denying network access are included.

The software price ranges from \$11,000 to \$16,000 for a redundant system. A \$1,995 packet assembler/dissembler from Plantronics, connecting the host PC to the network, is required.

**Plantronics Futurecomms**  
7450 New Technology Way  
Frederick, Md. 21701  
(301) 662-5926

Micom Communications Corp. has released the Featurepak software enhancements for its X.25 network communications products.

The cartridges can be installed directly into the company's MB-3 and MB300 packet switch hardware. Featurepak increases control over public network access and also transmits High-Level Data Link Control traffic over leased X.25 protocols.

This function allows voice and fax signals to share lines with X.25 traffic at 56K bit/sec., avoiding tolls on public lines, according to Micom.

Pricing for basic configurations of Micom packet switches starts at \$2,555.

**Micom Communications**  
4100 Los Angeles Ave.  
Sunny Valley, Calif. 93063  
(805) 583-8600

**Links**

Interlink Computer Sciences, Inc. has updated Datavore for Transmission Control Protocol/Internet Protocol (TCP/IP), a software package allowing Unix systems to back up and restore data on MVS mainframe tape drives.

Datavore for TCP/IP runs in conjunction with the firm's SNS/TCPaccess and SNS/API software products. It allows Unix systems users to use highly reliable existing backup resources. Unit storage utility commands work unmodified.

The product costs \$9,950. Introductory price discounts are offered.

**Interlink Computer Sciences**  
47370 Fremont Blvd.  
Fremont, Calif. 94538  
(415) 657-9800

**Electronic mail**

Mustang Software, Inc. has updated its Widcat Bulletin Board System software.

Version 3.0 features point-and-shoot message entry and file transfer procedures. A Work Processor capability has been added for message editing. System operator functions have also been expanded, and gateways to MCI Communications Corp.'s MCI Mail and ComputerServe, Inc.'s Information Service are included.

The professional version costs \$499. Low-end versions are available.

**Mustang Software**  
1915 17th St.  
Bakersfield, Calif. 93303  
(714) 395-0223

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Roger A. Peterson  
Director of Information Systems  
Kawasaki Motors Corporation

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“It gives me a reading on what real people are doing out there...so I know if I'm onto something that's leading edge and that has proven business applications.

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# MANAGER'S JOURNAL

## EXECUTIVE TRACK



John R. Mohr has been elected executive vice president at the New York Clearing House Association, the nation's oldest and largest bank clearinghouse, with 12 member banks. He succeeds William L. Walsh, who died in November 1990.

Mohr, 43, is responsible for overseeing paper-based exchange and settlement procedures and the clearinghouse's two electronic funds transfer systems.

Mohr was formerly executive vice president at the Bank of New York. He had been executive vice president at Irving Trust Co. since 1967, responsible for funds transfer and deposit, trade and credit services, and he continued in the post after Bank of New York acquired Irving Trust in 1988.

Mohr spent 17 years at Irving Trust, beginning his career as an assistant secretary in the securities processing group. He is a graduate of Fordham University.

After hiring Mohr, the New York Clearing House Association announced two promotions in information systems management, both to newly created positions.

Joseph S. Pawelsky was promoted to vice president of system development. He has been manager of systems development since 1981.

Pawelsky, 44, was a systems manager at the former Burroughs Corp. from 1974 to 1981, responsible for systems engineering support of large systems in the New York metropolitan area. He is a graduate of St. Peter's College in Jersey City, N.J.

Albert Wood was promoted to vice president of technical services. He has been manager of data communications at the clearinghouse since 1981.

Wood, 38, was also formerly employed at Burroughs, working as a senior systems representative from 1977 to 1981. Before that, he was a programmer/analyst for Suffolk (N.Y.) County. He is a graduate of Long Island University.

## Opening systems to span the globe

*Du Pont sets up standards group to support worldwide business activity*

BY JOHANNA AMBROSIO  
CW STAFF

**O**pensystems are a lot like the weather: Many people talk about them, but few actually do anything. If DuPont Co. cannot yet change the weather, it will be doing something about open systems. Last year, DuPont established a small but formalized group in the Open Systems Program Office — to help shepherd the introduction of open systems throughout the global organization.

"Over the long term, open systems is fundamental to our strategy," says Raymond E. Cairns Jr., senior vice president of DuPont Information Systems in Wilmington, Del. "We're running worldwide networks, and we're continuously striving to connect all this capability. Open systems is one major way we're going to accomplish that."

The company plans to deploy widespread open systems by the middle of the 1990s, although DuPont's existing systems — chiefly the IBM mainframes and Digital Equipment Corp. minicomputers — will be around until at least the year 2005, Cairns says.

Do you, with some 100 businesses and 1,200 different products, achieve a first in 1990? More than half of the

company's revenue was derived from customers outside the U.S. The corporate IS function is working hard to help integrate that global reach.

"In order for us to be a really great global company, we need to leverage DuPont's resources to create a high degree of synergy across the corporation," says James Collins, manager of

partners and customers, a burgeoning tide of government regulations and paperwork and the need to respond more quickly to market needs.

"The technology infrastructure must change to satisfy those business drivers," Collins says. "We need to create an integrated DuPont information environment worldwide. And we can't do that with proprietary solutions."

Traditional proprietary systems, Collins says, "tend to be more costly and more complex and introduce delays in delivering solutions to our businesses."

Translators and gateways must be built to connect proprietary systems, "so you can't effectively respond in that kind of environment," he adds.

To build that interconnected worldwide network of open systems, DuPont wants technology based on international standards. "But we're pragmatic," Collins says. "International standards take time to develop and be formalized."

In the meantime, he says, DuPont will work with national and de facto standards such as the X/Open Portability Guide and the Open Software Foundation's (OSF) Distributed Computing Environment. DuPont, working with about a dozen other user organizations, is expected to announce next week

*Continued on page 78*



*James Collins: Any information should be available to anyone in the corporation that needs it to do his or her job.*

the Open Systems Program Office. "Any information should be available to anyone in the corporation that needs it to do his or her job."

Other driving factors behind open systems at DuPont include scenarios that are common to many types of businesses: closer partnerships with sup-

pliers and customers, a burgeoning tide

of government regulations and paperwork and the need to respond more quickly to market needs.

"The technology infrastructure must change to satisfy those business drivers," Collins says. "We need to create an integrated DuPont information environment worldwide. And we can't do that with proprietary solutions."

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*Continued on page 78*

## States lauded for innovation in hard times

BY CLINTON WILDER  
CW STAFF

**F**or some state government information systems staff experiencing budget cuts and layoff notices, there is reward amidst the pain.

The National Association of State Information Resource Executives (NASIRE), based in Lexington, Ky., recently chose seven state government systems across the country as particularly innovative and productive. The winners will be honored at NASIRE's annual meeting in Kailua-Kona, Hawaii, Aug. 5-8.

Massachusetts, one of the hardest-hit states economically, was honored for developing a plastic "smart card" system for the state's \$80,000 Medicaid recipients.

Each of the state's 30,000 health care providers has a card reader that plugs into the state's eligibility database,

thereby providing quick verification of Medicaid coverage for a particular service.

The following states also won awards:

• Kansas. Using optical disc storage and other technologies, the Kansas Department of Health and Environment automated its Office of Vital Statistics. The project included an "electronic birth certificate" now used to report 77% of births in the state.

• Pennsylvania. The Pennsylvania Emergency Management Agency, which is located in Harrisburg, uses a local-area network of 50 personal computers to run its Emergency Operations Center. The center runs on Emergency Information System software from Rockville, Md.-based Research Alternatives, Inc., which received a Computerworld

Smithsonian Award two weeks ago.

• Delaware. Most U.S. companies are incorporated in Delaware, meaning lots of paperwork for the state's Division of Corporations. A Wang Laboratories, Inc., imaging system has automated much of that process.

• Arkansas. The state developed standard applications for administering county government; the County Management Information System is used by 15 counties.

• Washington. The state's Homicide Information and Tracking System collects murder information from 274 law enforcement agencies in order to help detectives track and convict killers.

• Wisconsin. The state's IS staff decided to take a dose of its own medicine, implementing a series of Automated Production Control techniques to automate the state's IS operations.

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**THE OPEN ADVANTAGE.**

## Du Pont

FROM PAGE 75

which standards it expects vendors to build systems on.

Du Pont's journey toward open systems began around 1988 when the Du Pont fibers group started scoping out its IS requirements for the 1990s. Out of that work, an interdepartmental open systems task force was formed to define the strategy behind open systems, and the Open Systems Program Office was born in early 1990.

The man chosen to lead the open systems charge was Collins, a 28-year Du Pont IS veteran most recently in charge of managing the IS function for Du Pont's engineering organization. Collins reports to Thomas Holmes, director of the architecture and planning group, who in turn reports to Cairns.

Cairns is so convinced of open systems' strategic importance to Du Pont that he accepted the OSF's invitation to join its board as its first, and thus far only, other organization among all of the vendor members. "I'm willing to spend the time to help them un-

derstand Du Pont's open systems needs," he says.

The current priority at Du Pont is making existing systems interoperable as opposed to implementing new open systems such as Unix-based applications, Collins says. But there are some plots and other applications going on in the fibers, engineering and research and development groups in areas such as Unix-

based client/server applications.

One group, for example, replaced its mainframe production scheduling system with a Unix system. "This saved the users their chargeback costs and freed up the mainframe for other



**Colman Collins:** Open systems fundamental

applications," Collins says.

The biggest challenge, however, will be managing the human transition as IS staff members learn how to build and think about building systems. "We are change agents for this new

type of computing that will be important to Du Pont as we move ahead in the '90s," Collins says. "We're focusing on what we need to do to change the culture — to develop an open, distributed mind-set in our IS people. And that's going to be a significant challenge, probably more so than the functional objectives that we're after."

Open systems is a long-term

## A full plate

Among the responsibilities of Du Pont's Open Systems Program Office are the following:

- Develop processes to help the line organizations understand and implement open systems.
- Identify people in the line organizations to work on open systems projects.
- Work with people in the line organizations to help identify and implement open systems projects that have short-term payback and solve some immediate business need.
- Establish criteria for measuring the value of open systems.
- Act as a clearinghouse for information about open systems, including products and support requirements.
- Work with vendors to help them understand Du Pont's open systems needs and to understand the vendors' plans.
- Work with outside groups such as X/Open, the Corporation for Open Systems, the User Alliance for Open Systems and the OSF to try to establish standards so that open systems products get to market as quickly as possible.

effort at Du Pont, and the activity is not being flooded with resources quite yet. So far, the Open Systems Program Office consists of only Collins, a senior technical staffer and an administrative support person. Additionally, several dozen people in the line organizations are working to help implement specific open systems projects.

"There are many activities

competing for a scarce resource pool," Collins admits, "and we have to balance the short term with the long term." He says Du Pont will try to leverage its existing IS personnel to get them to adopt open systems.

The key to that effort is educating Du Pont's 6,000 IS professionals worldwide about the benefits of open systems.

"Change can be threatening

to people," Collins says. "By having this central resource available, it will help ease them through the change."

Du Pont will build its own systems implementation and expertise over the next decade. "It's a long-term commitment, but we believe we have to start now because of the investment that's required in developing the skills we need," Collins says.

## Op'-en sys'-tems

An open system, as defined by Du Pont, is an integrated computing environment consisting of components whose functions and interfaces comply with widely implemented, vendor-neutral standards.

It provides interoperabil-

ity, applications portability and scalability as well as encompassing many different components, including user interface, operating system, development tools, networking services and database access.

## MANAGEMENT SHORTS U.S. hiring on rise?

There may be a pickup in U.S. corporate hiring in the third quarter, according to the most recent survey by Manpower Inc., Inc. Manager's quarterly survey of hiring intentions found that 22% of the 15,000 firms polled plan to expand their work forces in the third quarter, while 10% plan reductions. That contrasts with second-quarter intentions, which found 18% of the firms planning to hire and 13% intending to cut back. Those figures, resulting in a hiring strength factor of only +5%, were the most pessimistic since the recession of 1982.

A national search for the best computer applications to help the disabled was announced by Johns Hopkins University, the National Science Foundation and MCI Communications Corp. Johns Hopkins conducted a similar search 10 years ago, honoring three winners chosen from 8,000 entries. Atlanta and nine other major U.S. cities will hold regional competitions, and the top 30 winners will exhibit at the Smithsonian Institution Feb. 1-2, 1992. The grand prize winner will receive \$10,000. Application forms and information are available from The Johns Hopkins National Search, P.O. Box 1290, Laurel, Md. 20723.

The three consulting and research firms owned by the Paris-based parent of Cap Gemini Segoe<sup>†</sup> are allied under the umbrella name of Gemini Consulting: The Mac Group, Cambridge, Mass.; United Research in Morristown, N.J.; and Gramma International in Chicago.

# nises, nises.

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## COMMENTARY

Christine Comaford

## New technology: One step at a time



Most information systems managers don't ask for much. They're reasonable people. When making new technology decisions, they really want only three things: to buy technology that truly provides the

features and functionality the vendor says it will, to avoid mistakes in selecting new technology and to keep the costs of new technology within their budget.

Most Fortune 1,000 firms like to get their feet wet by getting evaluation copies of a few products and buying a few hours' worth of consulting expertise.

The following suggestions are geared toward IS professionals who want to implement new technologies successfully:

- **Assessing new technology.** Before you make a tentative commitment to a new software tool, for example, evaluate your options. Isolate a reasonable number of products (five, for example) and decide up front that your goal is to limit the possibilities to three products.

"Real world" feedback is priceless in

product evaluations. Take advantage of the significant number of free consultants available to you from peers who have implemented or are in the process of implementing the technology you are considering. As long as they aren't direct competitors, you'll often find that they'll be happy to discuss what did and did not go well in their use of new technology.

Ask what happened after the honeymoon with the new computer-aided software engineering tool ended. Did they hit a brick wall? If so, did the vendor help them to get back on track?

Remember that hindsight is 20/20 vision. Learn from someone else's valuable experiences. All it will cost you is a phone call or, at most, lunch.

In addition to peers, talk to consultants — but beware of the consultant who is a reseller of a particular product. You want objective input. Someone who works with corporations of your size or with IS issues similar to yours can provide a lot of behind-the-scenes information in a one-hour meeting.

• **Rapid prototyping.** Once you have screened out a few products, the next step is prototyping. Assuming you have fairly well-defined specifications, a rapid prototype can assist in "selling" technology changes to upper management.

But remember to set expectations realistically. Other people who are not directly involved in a prototype will see a demo and assume the new application is nearly ready for a production environment. This perception is dangerous because it can trivialize a project and negatively affect the desired amount of funding.

Training in new technologies can be costly and time-consuming. Get the vendors involved. You may be able to get free training or free prototype development assistance.

• **Introducing new technology in stages.** Sweeping, expensive changes are not necessary initially. If the prototype suggested above is a success, take the next step. Select a low-risk (not mission-critical) application for a pilot site. The success of the pilot will be a crucial factor in determining whether the technology is to be deployed companywide.

So start off on the right track. Start small, get all of the players involved, continue to manage expectations and get external expertise if required.

Your pilot will be used as a role model, so be sure it is standards-compliant. If you don't know what the current and de facto standards in a particular area are, find out. A little extra money spent here can

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save a significant amount later.

Also bear in mind your long-term corporate strategy. The pilot application may need to integrate with existing or new applications, so stay involved with end-user computing. Stay in touch with vendors so that you'll know what products are forthcoming.

There is a lot of pressure on corporations to make their systems more efficient — faster, more secure, easier to use, more "modern" and less costly. This is the long-term goal, and you can start taking steps toward it today.

Read articles about how other firms are implementing successful technology changes. Talk to your peers, attend conferences, interview a consulting firm. Technology mistakes won't happen if you draw on the experiences of others and carefully chart your course on the road to the leading, and not bleeding, edge.

Comaford is president of Computer Consulting, Inc., a consulting firm based in San Bruno, Calif.

## CALENDAR

JULY 14-20

**Gulde 80, Institut.** July 14-19 — Contact: Gute Headquarters, Chicago, IL (312) 644-6610.

**American Association for Artificial Intelligence National Conference on Artificial Intelligence.** Ann Arbor, Mich., July 14-19 — Contact: AAAI-81, Medie Park, Calif. (415) 338-3133.

**TOM '91 Conference.** Washington, D.C., July 15-17 — Contact: Paul Harrington, Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-6777.

**Computer Technology and Military Planning Symposium and Exhibitions.** Arlington, Va., July 16-19 — Contact: Armed Forces Mission Planning Society, Fairfax, Va. (703) 879-7823.

**Information Engineering/R&B Weblog.** Washington, D.C., July 16-19 — Contact: Technical Transfer Institute, Santa Monica, Calif. (313) 879-4500.

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**Video Expo.** Chicago, July 15-19 — Contact: Debbie Brink, Knowledge Industry Publications, White Plains, N.Y. (914) 258-8125.

**Enterprise '91.** Silverdale, Wash., July 15-21 — Contact: Turbo User Group, Peoria, Ill. (206) 779-9500.

JULY 21-27

**IPD Quarterly Meeting.** Pittsburgh, July 21-23 — Contact: National Computer Graphics Association, Fairfax, Va. (703) 879-9600.

**Developing Corporate Computing.** Chicago, July 23-25 — Contact: Business University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

**Modality '91.** The Mountain Conference Center, Scotts Valley, Calif., July 23-25 — Contact: Weatherhead Computer Co., Los Gatos, Calif. (408) 370-2560.

**Software World.** Toronto, July 23-25 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0525.

**Applied Intelligence.** and the Holy Book Fair. San Francisco, July 23-25 — Contact: Holy Book Professionals, Colorado Springs, Colo. (719) 531-6136.

JULY 28-AUGUST 3

**International Manufacturing Graphics.** Las Vegas, Aug. 1-4 — Contact: MFG, Memphis, Tenn. (615) 654-1229.

**Manufacturing vs. Outsourcing: Innovation Without Compromises.** Hilton Head, S.C., July 30 — Contact: Robert Gray, The Yankee Group, Boston, Mass. (617) 367-1800.

AUGUST 4-10

**National Telecommunications Conference.** Seattle, Aug. 4-7 — Contact: Andy Winkler, The Worldwide Group, Boulder, Colo. (303) 446-3412.

**Software Maintenance and Re-engineering.** Washington, D.C., Aug. 5-9 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

**CASE World.** Boston, Aug. 6-8 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-0525.

**Implementing Re-engineering.** Phoenix, Ariz., Aug. 6-8 — Contact: Hammer and Co., Cambridge, Mass. (617) 254-5555.

**Lenders '91.** San Francisco, Aug. 9-10 — Contact: Local Area Network Distributors Association, Belmont, Ill. (708) 579-2351.

AUGUST 11-17

**Information and Technology: Gateway to Solutions.** San Francisco, Aug. 11-15 — Contact: URSA, Washington, D.C. (202) 286-1454.

**Manufacturing Materials Conference.** Chicago, Aug. 12-13 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3000.

**Executive Data Interchanges for Government.** Washington, D.C., Aug. 13-15 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

**The National Conference on Computing.** New Haven, Conn. Aug. 13-16 — Contact: The Research Center on Computing and Society, Southern Connecticut State University, New Haven, Conn. (203) 397-4232.

**Windows and OS/2.** Boston, Aug. 14-15 — Contact: CM Ventures, Encino, Calif. (415) 661-5600.

AUGUST 18-24

**Smart 77.** Chicago, Aug. 18-23 — Contact: Smart Headquarters, Chicago, Ill. (312) 644-4410.

**ANSI Including Modem Week '91.** San Francisco, Calif., Aug. 19-23 — Contact: Pamela Bassett, MIS Training Institute, Framingham, Mass. (508) 879-7999.

**The Santa Cruz Operations Forum '91.** Santa Cruz, Calif., Aug. 19-23 — Contact: The Santa Cruz Operations, Santa Cruz, Calif. (408) 425-7222.

**Pad Shows.** Washington, D.C., Aug. 20-21 — Contact: National Trade Publications, Inc., Alexandria, Va. (703) 663-8599.

**Peer CD-ROM Conference and Exhibitions.** Washington, D.C., Aug. 20-21 — Contact: Sybille Gottlieb, National Trade Publications, Alexandria, Va. (703) 663-8599.

## BOOK REVIEWS

## Fact-based thriller raises questions of computer security

**Terminal Compromise**  
By Wm Schwartz  
*Inter.Pact Press*, \$19.95

For light summer reading with weighty implications, Wm Schwartz's fact-based novel, subtitled *Computer Terrorism: When Privacy and Freedom Are the Victims*, is thought-provoking, some-

times chilling and sometimes hokey.

The author weaves a complex tale of a Hiroshima survivor who plots the downfall of the U.S. by dismantling its public and private computer systems.

Readers who can follow the antics of a long cast of characters through the 570-page book will get a taste for how vulnerable computer systems are to those who are determined to penetrate them. They will also get a feel for the kinds of destruction some well-placed computer sabotage culprits have on everyday computer-dependencies, such as automated teller machines and airline computer reservations systems.

The Japanese character, Homosoto, assembles a band of international computer-thugs to execute the various pieces of

his destructive plan. The thugs concoct an elaborate blackmail scheme to lead the FBI away from the real problem: thousands of time-bomb computer viruses that have been planted in popular software packages and on public bulletin board systems.

There are twists and subplots along the way, and even a government conspiracy thrown in for good measure. But Schwartz's characters are not always believable. Most notable is the book's main character and hero, an engineer-turned-reporter who somehow lands a job at a major New York City paper. The rookie reporter manages to ingratiate himself

with everyone — fromeditors to henchmen to FBI agents. He then writes about his experiences in poorly constructed articles that are sprinkled throughout the book.

Schwartz knows about networks and security and creates an interesting plot that will keep readers turning the pages. It is unfortunate his characters are not as realistic as the chilling scenarios he paints.

ALAN J. RYAN

**Going Public: Mips Computer and the Entrepreneurial Dream**  
By Michael S. Malone  
*Edward Burdstone/HarperCollins*, \$22.95

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When a relatively small technology company nestled in Silicon Valley sells its first public share of stock, it is a success story as routine as the U.S. hockey team in the 1980 Olympics.

Michael S. Malone's 279-page book depicts the triumphs and tribulations of Mips Computer Systems, Inc. as it maneuvered from a start-up firm spearheading a new technology to its climactic initial public offering in the final section of the book, simply titled "The Day." The author's writing consistently recalls all possible pitfalls on the road to Wall Street, but also the perks that make the pains worthwhile.

Going public is the day when entrepreneurship is rewarded for its sacrifices and risks, and through interviews with everyone from top executives to secretaries, Malone illustrates how that pivotal day changed the way Mips and its employees would do business forever.

KEVIN BURDEN

**High-Tech Ventures: The Guide for Entrepreneurial Success**  
By C. Gordon Bell  
with John E. McNamara  
*Addison-Wesley Publishing Co.*, \$29.95

C. Gordon Bell, creator of the VAX architecture for Digital Equipment Corp., has been involved in 20 start-up companies during his career. But this 367-page book explores more than just how to become a successful entrepreneur. Many of his observations on management — including discussions of firing or not hiring those programmers who do a net negative amount of work for you — apply to anyone leading technically skilled people.

Readers may find his discussion of the rates of improvement in the memory and power of systems a useful guide to the types of new equipment to consider when buying systems. For instance, will microprocessors be more powerful than mainframes by 1996?

Another interesting point is whether or not IS departments should consider exporting programming jobs to other countries. Compared with American programmers, for example, programmers in Japan create twice as much code per programmer with only 10% of the errors.

JOHN STURM

Sturm is president of Productivity Research in Melrose, Mass., and founder of the Consultants and Entrepreneurs' Group of The Boston Computer Society.

# PRODUCT SPOTLIGHT

## PORTABLES AND LAPTOPS

*Notebooks are selling like hotcakes — but look again, and you'll see room for improvement in connectivity, availability and power issues*

BY WILLIAM BRANDEL

The scene is the dining room of an average young couple, reviewing insurance possibilities with a Prudential sales agent. The man and woman shift nervously in their chairs, overwhelmed by the decisions they have to make. Insurance is there, however, when the agent draws their attention to the numbers glowing on the screen of a Superport SX, a laptop computer from Zenith Data Systems.

The 16.8-pound Superport played its role well, but it probably won't find its way into the next round of television commercials from The Prudential Insurance Company of America.

According to a Zenith Data spokesman, Prudential has shed about 10 pounds in the portable area by placing an order for Zenith Data's recently announced Masterport, a 6.6-pound notebook computer.

Prudential is not the only company being wooed by the lighter, higher performance machines. Shoppers of notebook computers will jump from an estimated \$10,000 at the end of 1991 to an approximate \$12,000 in 1992, while heavier laptops will show only a slight rise from \$59,000 to \$59,000 during the same period, according to International Data Corp., a Framingham, Mass.-based market research firm.

### Behind the cameras

Commercials seldom tell the whole story, however. As the camera zooms in on the laptop, what viewers don't see is the agent actually using the system to interact with the office to get the new account in gear.

To do this, the agent would have to ask the young couple for permission to use their asynchronous telephone jack to upload the information to the

Brandel is a free-lance writer based in Boston.



David Pomeranz

home office, then ask them to send her the bill for the telephone call. Or the agent could wait until she gets back to the office, where she would hook the portable into the local-area network with an adapter card, or she could hand a disk to someone else who would set up the connection.

The trouble is that there is currently no seamless, trouble-free way of getting the data from the portable to headquarters (see story page 89).

Other problems associated with mobile computing are more closely related to notebooks themselves, including supply shortages, battery power limitations, compatibility problems arising from nonstandard ports and keyboards and the typical

(albeit diminishing) complaints about poor screens.

"Right now, it's still a trade-off," says Bruce Arbezios, director of information systems in the Prudential Agency Department at Newark, N.J. "These laptops are wonderful point-of-sale, but they're not for everybody. You wait for travel and drive; you even wait six to eight weeks to get evaluation units."

In terms of transmitting files to headquarters, modem manufacturers such as Micromax, Inc., the Portable Products Division of U.S. Robotics (formerly Touchstone Systems, Inc.) and Megahertz Corp. have made the process more subtle by designing standards-based data modems and fax modems that can

either be placed inside the portable itself or carried along separately in a 6- or 7-inch package.

More and more manufacturers are including either third-party or their own internal modems as a standard feature on their systems.

However, while external modems transmit data up to 9.6K bit/sec. — and even 12K bit/sec. in Micromax's case — internal modems transmit at 2,400 bits/sec.

The slow speeds are a problem for executives such as Sheldon Laube, chief information officer at Price Waterhouse in New York. Laube's staff of accountants and auditors needs to transmit large amounts of data to the home office from remote sites to expedite the data polling activity involved with their Long Distance Corp. Notes application.

Although Laube uses a U.S. Robotics external unit, he says he'd prefer internal modems for his staff. "We need [9.6K bit/sec.] modems, and we can't get them," he says.

### Too hot to handle?

According to Jerry Caron, an analyst at Faulkner Technical Reports in Pennsauken, N.J., there is a good reason for this. He claims that a 100-watt computer could not withstand the heat generated by the 3.3 watts of power required to send data at 9.6K bit/sec. By comparison, travel at 2,400 bit/sec. requires a small fraction of that power — just 550 milliwatts.

One manufacturer insists the speedier internal modems will be out next year. "Companies are working on it, and they should be out next year," says Bob Goldfarb, marketing communications manager at Grid Systems Corp.

Much-talked-about cellular modems don't do much to increase internal modem speed, but they do eliminate the awkward hookup to telephone lines.

The problem is that they represent "a little less than one-tenth of a percent of modems

*Continued on page 84*

### INSIDE

#### Cost of Ownership

Portables still cost twice as much as desktop machines. Page 84.

#### How to Phone Home

It's not always easy to transfer files back to home base. Page 89.

#### Buyers' Scorecard

Compaq SLT/286 scores highest in laptop segment. Page 90.

# True costs of portable computing

BY ANDREW M. SEYBOLD

The good news is that prices are dropping on portable computers — and dropping fast. In the fourth quarter of 1990, when more than 43 different shapes and sizes of Intel Corp. 80386SX-based notebook computers were introduced, list prices went from a Compaq Computer Corp. high of about \$6,800 to a low of \$2,200 from a slew of offshoots over a period of only six weeks. Even Compaq prices have dropped 20%.

The bad news is that after adding up what you pay for the unit itself plus all of the necessary add-ons, it will still cost you nearly twice as much to buy a portable computer as it would to buy a similarly configured desktop computer. This situation probably won't change for the next few years.

One reason for the price difference is that many of the components for portable computers have higher prices than their desktop brethren. LCD display panels, low-power memory and processors, batteries and even the plastics that house them all cost more, pushing street prices for portables, \$1,000 to \$2,000 higher than similarly configured desktop machines.

The street price for the basic unit doesn't tell the whole story, however. Add-on products and other accessories also have high premiums attached to them. These higher prices can be traced to the fact that unlike desktop systems, most portable computers do not have slots or standard expansion bases; they

only have room for the addition of a monitor and additional memory modules.

Because each vendor has and in fact different models within a product line — uses different types of slots, costs for add-ons such as modems and memory are pushed up, sometimes by 50% more than for a desktop system.

Nonstandard slots also make it important for users to select a unit that meets most of their needs out of the box. Adding on as time goes by is not an easy task — or even a possible one, in some cases.

A third cost consideration that does not typically enter into the desktop equation is that of spare batteries and a sturdy carrying case. Spare batteries run in the

System type	Spring '90	Fall '90	Spring '91
8086 family, no hard disk	\$2,000	\$1,600	\$1,100
80286, hard disk	\$4,100	\$3,600	\$2,300
80386SX, hard disk	N/A	\$5,200	\$3,400

Source: Fudger Technical Report

CW Chart: Site Computer

neighborhood of \$100, depending on the vendor, and carrying cases can cost anywhere from \$50 to well over \$300, depending on the type of case and design.

You also have to assume that service and repair costs will be higher for portable equipment — sometimes by as much as 50%, depending on how the portable is treated in the field.

A more ambiguous cost factor often overlooked by purchasers is the potential for data loss. Information residing on a portable computer is more exposed to loss, theft and misuse. In fact, several large companies do not yet permit the use of portable computers by staff members simply because the companies have not yet devised a consistent policy regarding systems backup and data security. \*

Seybold is associate director of the Microprocessor Systems Group at Datapoint, Inc. in San Jose, Calif.



Continued from page 83

used in laptops," says Ken Bosworth, director of research at International Resource Development, Inc. in New Canaan, Conn. In addition, "all four or five vendors in [the specialized cellular market] have the same kind of problem."

The biggest of these problems are inherent in the cellular networks, which were designed with car telephones and voice transmission in mind. Those types of transmissions can withstand higher noise than digital transmissions, which have a good chance of being corrupted on current cellular networks, says John Daniele, an analyst at Workgroup Technologies, Inc. in Hamilton, N.H.

The cellular industry has decided to make portable users truly mobile — able to transmit clear data without a hard-wire connection — will most likely be based on radio frequency networks. IBM and Motorola, Inc.'s Ardis network will eventually allow digital transmissions, but the commercial hardware and software products that enable this type of communication will not hit the market for about two years. Until then, users must be near a telephone jack.

Because there is currently no ideal way to interact with databases in the home office, people are trying to carry much of that data around with them. As a result, users are opting for higher capacity storage disks on the portables.

Manufacturers have started to offer 60M- and 80M-byte hard disks. But even with 60M bytes, it's difficult to get hold of a portable that actually contains one.

At Comdex/Fall '90, "there were all those great new 386SX machines announced . . . and then they came out four to six months after the announced ship date," says Mike Sterling, systems development manager at General Foods, USA in White Plains, N.Y.

The slew of notebook announcements is making it difficult for peripheral manufacturers to meet the demand for parts.

"About a month ago, we bought about

40 Toshiba 3200SX machines," says Stephen Root, manager of microcomputer technology at Coopers & Lybrand in New York. "The gas plasma screens were generally not available. With the new machines, one or two accessory items generally are not available."

While the production and quality issues of many peripherals have subsided somewhat, it will not be until later this summer that purchasers will see volume deliveries, according to analysts.

**I HAVE TO accept that they can deliver the drives if they put it down in writing. But I will still consider who the company is . . . and when they will get the first 60-M-byte drive off the line."**

AUDREY ALLOPENNA  
ADP

Meanwhile, buyers are starting to demand proof a vendor's ability to deliver. It is not less than a No. 1 priority at International Data Processing, Inc. (ADP) in Roseland, N.J., which is trying to acquire hundreds of notebooks to replace the 13½-pound Toshiba America Information Systems, Inc. 3100SX portables sales representatives currently use for sales demonstrations and linking back to the home office.

Audrey Alloppena, project manager at ADP, has a long list of requirements that vendors must meet, but the most challenging is a 30-day delivery commitment —

"I have to accept that they can deliver the drives if they put it down in writing," she says. "But I will still consider who the company is, how long they have been in

## Perfection is relative

**H**ighly mobile employees make up the largest base of portable computer users, but there are actually three basic categories, according to Peter Tylor, an analyst at Computer Intelligence/InfoScope in Santa Clara, Calif., and each looks for very different things in equipment.

Employees who work in the field use portable equipment outside the office and increasingly do not have a desktop unit at headquarters. The people in this group require the utmost in portability and look for several characteristics in their machines:

- Reliability.
- Light weight.
- Long battery life.
- ruggedness.
- Features that facilitate field applications — for instance, a "resume" feature that allows the user to stop the machine (in the middle of a presentation, for example) without having to reboot.

A smaller but fast-growing group includes people whose primary machine is their desktop unit but who use portables

for meetings or working at home. These people want a machine that plays well with what they use as a desktop machine. For this group, the following features are important:

- Enough power to run desktop applications, such as Microsoft Corp.'s Windows 3.0. This rules out anything lower than an Intel 80386SX-based machine.
- A lot of memory.
- A display adequate for gray shades and graphical user interfaces.
- Low price.
- Minimum size and weight.

The smallest group of portable users consists of people who are replacing their desktop machines with portables. These people may not have enough space for a desktop personal computer or may travel often enough to want a portable but be unable to justify purchasing two machines. This group requires the following:

- Desktop-equivalent performance.
- Large disk storage capacity.
- Expandability, especially for network and memory.
- Superior display quality.
- Desktop-comparable keyboard.

the laptop industry, how strong their pull is in the industry, what channels they are using and when they will get the first 60MHz drive off the line."

Once you get your hands on a high-density disk, there is still the problem of having enough power to support it. Large hard drives, high-powered CPUs, modems and especially screens require a lot of battery power.

"That's why you don't see any 386 notebooks," Faulkner Technical Reports' Carson says. "The electrical requirements would be too much."

With average battery life hovering around the 3- to 4-hour mark, extra power demands are

other peripherals, vary from nine to 25 pins.

In addition, portable computer keyboards differ not only from each other but also from desktop personal computer keyboards, with the exception of IBM's new portable. While that machine is in the weight category of a notebook, it is approximately 1.3 inches longer and twice the price of most other notebooks.

With other keyboards — such as the Compaq LTE — "our auditors have found that if you want to do things like page up, page down or use the home key, you have to hit 'Alt' and a function key at the same time," Rod says. "It just makes it more awkward than it should be."

Despite all the nagging problems, the benefits of laptops ultimately outweigh the shortcom-

ings. Manufacturers have done a good job of getting 386SX systems into 6- and 7-pound clamshells and on the market at competitive prices, which is becoming increasingly important as more companies move to Windows and OS/2.

While the preferable gas-plasma screens — which are said to alleviate eye strain — are not yet available on notebook com-

puters, LCD screens with IBM's Video Graphics Array are slipping on these systems. In a short time, notebooks will most likely fulfill their promise.

"I've followed a lot of the industry trends, including the new ones like palm-top computers," Sterling says, "but I think the notebooks and laptops represent what computers are supposed to be all about."

## A Few Minutes Of Downtime Can Have A Devastating Effect On A Vital System.

A company's computer system is the very heart of its operations. But let it respond slowly to its users, and you'll hear complaints up and down the halls. Let it go down for any length of time, and you'll find cases of cardiac arrest, right there in the data center.

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OPT	PREVIEW	EXPRESS	EXTENDED	
IMAGE II			DE	
IMAGE			FLASH	
NETWARE			FLASH	
WINDOWS			FLASH	
EMBEDDED			FLASH	

\* CW Chart: Darren St. John

sometimes not so practical, especially when you consider that recharge time can be three to four hours.

The Intel Corp. 80386SL chip, designed specifically for portable computers, promises to cut down on battery power consumption; in fact, the recently announced Zenith Data MasterSport 80386SL promises eight hours of battery life.

Such a prolonged power supply does come with a price premium, however: Zenith Data's system costs \$5,000.

There are similar "gotchas" when it comes to hooking up portables to keyboards and other peripherals. Notebooks contend with standardization issues. Connector pins on serial ports, which allow the machine to hook up to printers, display terminals and

**D**espite his wealth, Phinnias Pritchard lived in a small hovel within the bowels of London's East End. To call him miserly would be entirely too generous. Consider this illuminating example:

Rather than spend a half penny for new candles like everyone else, Phinnias would make the rounds of local establishments, scrape the tallow drippings from old candleholders into a sack, and later melt the contents to make new candles. On one particularly productive evening he collected six scrapings from a pub, four from a butcher's shop, twelve from a church abbey, eight from a neighborhood inn, ten from a local

cockfighting hangar and nine from a cobbler's shop. Query: If it takes the remains of seven candles to make one new candle, and if one candle lasts an entire night, how many full nights of light was he able to create from this trip?

Certainly it's hard to quarrel with Mr. Pritchard's motives. Especially in this era of revered recycling. But, one could legitimately question whether he was receiving an adequate return for all the effort he expended. (Though it did yield in excess of seven candles.)

One could also question what all of this has to do with Wyse.

Believe it or not, quite a bit.

Because—in the interest of ergonomic reform—we are conducting a sort of recycling effort of our own. From May through August we are paying \$50 for any antiquated terminal traded in on a new Wyse WY-150, WY-160, WY-185 or WY-370.

Obviously, we don't actually nals. But we will see that the old units posed of, then recycle \$50 into your effort. So if you are still cursed with nals, here's your chance. After all, terminals worldwide in the past how to build new ones. we are able to offer such standard terminals with



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a broad line of industry-  
a combination of features

and ergonomics unsurpassed by competitive terminals. User-comforting ideas like our unique detachable keyboards with light-touch keys and high tactile feedback. Tilt & swivel monitor bases and higher refresh rates plus overscan video for flicker-free images. All at price/performance ratios that are controller-comforting.

Besides being the largest independent terminal company in the world, today Wyse is also recognized for its broad line of PCs as well as its multiprocessing advanced systems. Probably because we provide the same kind of ergonomics, performance and aggressive pricing that has made us so strong in terminals.

By now the attentive reader has learned two things: Mr. Pritchard's recycling program netted him more than seven candles and Wyse's recycling program can net purchasers several hundred dollars towards the industry's finest terminals.

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# WYSE

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## Portable speed, security, color at issue

BY DEREK SLATER

Portable computers are giving their desktop counterparts a run for their money by adding chip speed as well as new features for I/O and security.

• Hot chips: While vendors spin their wheels to get Intel Corp.

80386SX notebooks into users' hands, 1486-based notebooks are scheduled for shipment this month. Houston-based Notebook Computer Co. has already announced its entry into this area.

• Pretty pictures: Portable computers with color LCDs have

been around for close to two years. Rather than enthusiasm, however, these models have generated complaints about cost, weight and low-quality displays. Although the expense and weight issues have not been solved, at least two vendors have been working on quality.

Toshiba America Information Systems, Inc. introduced its T3200XC in March. This 17-pound, \$9,000 machine uses thin-film transistor technology to supply constant power to each pixel instead of running row-by-row power refreshers, which result in higher readability.

Modgraph, Inc., based in Bur-

lington, Mass., is touting its first portable with 256-color Ultra Video Graphics Array display with a resolution of 1,024 by 768 pixels on an 8½-in. screen. The Intel 80386-based machine costs \$6,995.

"There's no immediate need for every vendor to have a color model in their line," says Mark Levitt, personal computer analyst at International Data Corp. in Framingham, Mass.

• Of mice and trackballs: As portable processing power increases, so does the possibility of using graphical user interfaces such as Microsoft Corp.'s Windows 3.0. However, because most laptops lack space for a mouse pad, the trackball is becoming an input option for laptop users.

Trackballs that are specifically designed to clip onto portable computers are made by Microsoft and Logitech, Inc. According to Levitt, trackballs emulate mouse control "fairly effectively" and are priced between \$140 and \$170.

Another input option is Culver Research's Isopoint, a directional-key device located on the keyboard below the space bar. Both Grid Systems Corp. and Zenith Data Systems have integrated the Isopoint for mouse emulation. Compared with trackballs, Isopoint is a useful but pricey option, Levitt says.

• Safe storage: When sensitive data is stored on a PC, mobility may be more of a concern than a blessing. A disk that acts as a key to the system is one solution.

Personal Computer Card Corp.'s Languard requires users to insert a key 3½-in. floppy disk into the portable and enter a password.

The product also locks the screen when access is attempted without the correct disk. •

*Sister is Computerworld's new products writer.*

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# The challenge: Hooking up portable computers and LANs

BY ANDREW M. SEYBOLD

It is certainly possible to connect a portable computer with a local-area network, but it is not easy or always reliable, and it tends to be costly.

Nevertheless, most people do need to access the LAN regularly to download and upload files, send and receive electronic mail and update their traveling computer files.

Currently, the least expensive and simplest method is to hook up the portable and the LAN via a LAN adapter card and a piece of cable. Of course, this assumes the user is on the same site as the LAN.

These portable LAN adapters — such as those from Megabite Corp. in Salt Lake City, Xircos, Inc. in Woodland Hills, Calif., and IQ Technologies, Inc. in Bothell, Wash. — are about the size of a pack of cigarettes and hook up to the portable computer's parallel port.



Source: Dataquest, Inc. C/W Chart: Darren St. John

Versions for Ethernet, Arcnet and Token Ring networks are available in a variety of speeds. Pricing ranges from a few hundred dollars to almost \$900 for the recently announced 16Mbps unit from Xircos.

The problem is that most portables do not have industry-standard bus connections, so each adapter also comes with software that convinces the portable that its parallel port is a LAN port.

Late 1992 will likely see portables featuring standard small computer systems interface (SCSI) ports. There is already a series of SCSI-to-LAN adapters available from companies such as Adaptec, Inc. in Milpitas, Calif.

Several companies, including Toshiba America Information Systems, Inc., offer internal LAN adapter cards that fit inside the portable itself, sometimes in place of the modem card.

Docking stations are another way to establish an on-site hookup. A docking station is essentially an external chassis that the portable computer can be plugged into to provide automatic links to external power and video, full-size keyboards and industry-standard XT/AT bus expansion slots.

Compaq Computer Corp., Toshiba, Zenith Data Systems and soon IBM all sell proprietary docking stations. The connection essentially turns the portable into a full-blown desktop unit, so not only is there no special software required, but the same network card used in desktop systems can also be used for the portable.

Docking stations are still expensive,

however — sometimes as costly as a complete Intel Corp. 80386SX desktop system.

With either a docking station or a LAN adapter card, the network architecture needs to be configured to support not just fixed but also temporary floating nodes that are connected and disconnected, added and deleted at the user's whim.

Of course, it's not always practical to head back to the office everytime you need to upload or download information.

Some people are remotely located or always on the road.

In these cases, a remote-control communications package can be loaded onto the portable to interact with either a given desktop personal computer or a network server via a built-in or portable modem.

#### Making connections

The network must be set up with a modem as well as a copy of the software so the portable user can dial in and make a connection.

Remote-control packages, which are available from many vendors (see chart at left) also allow users to substitute the portable's keyboard and screen for that of a desktop PC.

This type of connection is not nearly as easy to configure or use as the physical link, but once installed, it can provide remote network access not only from portable computers but also from desktop units located in remote offices or an employee's home.

On the other hand, remote connections permit only one user per modem to remotely access the system at one time. In addition, precautions must be taken to ensure that the system is not accessed by unauthorized users.

Remote LAN connections will become easier in the next few years as more hardware and software vendors enter the portable market and figure out that the world of portable computing is more than a small, battery-operated desktop PC. \*

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## BUYERS' SCORECARD

## Compaq edges out Toshiba in laptop ratings



## Laptop PCs

Total scores reflect average user ratings for all measured areas, weighted by user-assigned importance. Response base for all products: 50

Product	Highest ratings	Lowest ratings
Compaq Computer Corp.'s SLT/286	<b>SLT/286</b> <b>55</b>	Compatibility with current software Quality of system durability and ruggedness Processing performance
Toshiba America Information Systems, Inc.'s T1600	<b>T1600</b> <b>54</b>	Compatibility with current software Quality of system durability and ruggedness Processing performance
Zenith Data Systems' Supersport 286	<b>Supersport 286</b> <b>51</b>	Compatibility with current software Processing performance Hard disk performance

BY MICHAEL L.  
SULLIVAN-TRAINER  
CW STAFF

**L**ike Bo Jackson balancing careers in baseball and football, personal computer makers are repackaging their talents to become players in the fast-growing laptop market.

Compaq Computer Corp., a leader in the PC field, is also one of four laptop market leaders. *Computerworld's* "Buyers' Scorecard" on Intel Corp. 80286-based laptops reveals that Compaq is successfully carrying its strengths in compatibility, quality and performance over to this new arena. Users of Compaq's SLT/286 gave it the highest score overall.

However, the competition is very fierce in the two fields. While IBM and a host of smaller companies dominate the PC industry, Japanese companies such as Toshiba America Information Systems, Inc. provide different challenges in the laptop market based on new technology and price.

Following on the heels of the Compaq machine in market share and scorecard user ratings was Toshiba's T1600, which achieved the highest user ratings in three categories and placed second in all but one of the remaining categories.

Zenith Data Systems' Supersport 286 did not fare as well, achieving the highest user rating for only one attribute — price — and placing last in all but two other areas.

NEC's Proped 286, which is pre-

sented separately because of the small number of users available, received its highest user ratings for hard disk performance, variety of peripherals available and compatibility with current software. Users gave it the lowest ratings for quality of system weight and balance, networking capability and screen readability (see ratings next page).

Each user group rated only its own product across the 16 categories. The ratings are the averages of user responses. All users also assigned importance ratings to each category. Reported are the averages of these ratings.

Overall scores are also based on the averages of all categories, combining both user and importance ratings. Response base for the three products included in the scorecard was 50 users per product.

Compaq users gave their product the highest rating in the survey (9.1) for compatibility with current software, which all users surveyed rated as the most important category.

Toshiba users rated their product highest (8.3) in the second most important category — quality of system, durability and ruggedness — but Compaq was just a whisker behind at 8.2. Zenith Data was well behind with a 7.0 rating.

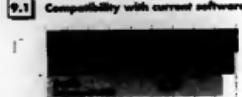
The group lined up in the same order for the third most important category, screen readability, although the scores were much lower. Zenith Data traded positions with Compaq, topping the category of providing a reasonable price with 6.5 compared with Compaq's 5.5, while Toshiba received a 6.3 rating. \*

## KEY RATINGS

Compaq Computer Corp.'s SLT/286 achieves the highest ratings in six of the nine categories most important to laptop users, including software compatibility, screen readability, size and processing performance. Toshiba America Information Systems, Inc.'s T1600 users rated it highest for system durability and keyboard ease of use. Zenith Data Systems' Supersport 286 users rated it highest for providing a reasonable price. Compaq rated last in that category.

User importance rating:

9.1 Compatibility with current software



8.9 Quality of system in terms of durability and ruggedness



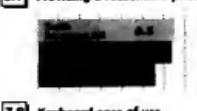
8.6 Screen readability



8.2 Size of system and ease of use as a portable



8.1 Providing a reasonable price



8.1 Hard disk performance



7.9 Keyboard ease of use



7.7 Ease of maintenance



## A CLOSER LOOK

Compaq Computer Corp. continued to achieve the highest ratings in six of seven closer-look categories, placing second to Toshiba America Information Systems, Inc. in quality and thoroughness of documentation. Zenith Data Systems' Supersport was rated lowest in six categories and placed second in battery capability. Toshiba finished last in that category but otherwise maintained second position.

## User importance:

**7.5** Quality of system weight and balance



**7.0** Quality and thoroughness of documentation



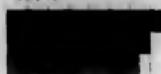
**7.5** Capability of battery



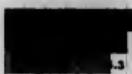
**6.5** Number of expansion options



**6.4** Number and quality of power supply options



**6.8** Variety of peripherals available



**5.9** Networking capability



## Verbatim

What is the major strength/weakness of this computer?

(Responses are based on the most frequently stated answers)

Likes  
Light weight  
Quality and durability  
Speed and reliability  
Dividends  
Keyboard design  
The heavy  
Screen readability

Likes  
Quality and durability  
Light weight  
Speed and reliability  
Dividends  
Screen readability  
Poor battery system  
The heavy

Likes  
Quality and durability  
Light weight  
Price  
Dividends  
Screen readability  
The heavy  
Keyboard design

## Loyalties

How likely would you be to buy another computer from the same manufacturer again?

(Responses based on most frequently stated responses)

Response base: 50  
Likely  
The reasons:  
Satisfied with product  
Unlikely  
The reasons:  
Too expensive  
Number of respondents

Response base: 50  
Likely  
The reasons:  
Satisfied with product  
Unlikely  
The reasons:  
Other products offer more features  
Number of respondents

Response base: 50  
Likely  
The reasons:  
Overall quality and value  
Unlikely  
The reasons:  
Other products offer more features  
Number of respondents

## Vital statistics

Total number of respondents: 100

What is your position?

Position	Count
Manager	100
Staff	33
Director	24
Other	12

How long have you been using this product?

Length of use	Count
More than two years	51
19 months to two years	57
One year to 18 months	39
Seven months to one year	15
Less than six months	7

How much memory is available on your system's hard disk?

Memory size	Count
20M bytes	78
40M bytes	70
30M bytes	6
10M bytes	4
Don't know	7
More than 50M bytes	3
50M bytes	1

How much RAM is available on your system?

RAM size	Count
1M to 1.5M bytes	80
Less than 1M byte	37
1.5M to 2M bytes	19
2M to 3M bytes	12
Don't know	11
4M to 5M bytes	6
More than 5M bytes	4

These scores assigned all criteria by mean scores each group gave its own product.

## ACKNOWLEDGMENTS

CompuMark's Buyers' Scorecard for laptop computers, a vendor had to be one of the top companies in market share in terms of installed base.

The survey was conducted and tabulated by Austin, Texas-based First Market Research.

Reader lists of users were surveyed from vendor sources.

Total scores were computed by multiplying

## NEC ratings

NEC Corp.'s Prospekt 286 offers a strong set of features, as reflected in the Buyers' Scorecard user ratings. A higher than average data transfer rate helps the laptop rate high in hard disk performance.

Users also gave the variety of peripherals a top rating because of options such as an IBM Video Graphics Array-compatible display.

Hard disk performance

Variety of peripherals available

Compatibility with current software

Processing performance

Quality and thoroughness of documentation

Quality of options in terms of availability and completeness

Number of expansion options

Size of system and ease of use as a portable

Number and quality of power supply options

Providing a reasonable price

Keyboard ease of use

Ease of maintenance

Capability of battery

Quality of system weight and balance

Networking capability

Screen readability

## METHODOLOGY

To qualify for CompuMark's Buyers' Scorecard on laptop computers, a vendor had to be one of the top companies in market share in terms of installed base.

Compaq's Intel Corp. 80286 laptops were selected from the vendors because they are the most widely installed systems.

# The Newest Member Of (Keyboard)

Keyboard

Contact Report

Document Edit 4-14a

CONTACT DATE	4/6/93		
TIME	7:47 AM		
SALUTER	MR.		
INTEREST	► DEMO		
PROSPECT CYCLE	► 40		
LEAD SOURCE	► EXISTING		
<input type="checkbox"/> WE CALLED			
<input type="checkbox"/> THEY CALLED			
IF CURRENT CUSTOMER	<input type="checkbox"/> HOME ONLY		
<input type="checkbox"/> TECHNICAL SUPPORT	<input type="checkbox"/> NEW OPPORTUNITY		
FIRM	ACCT#		
STREET			
CITY			
ZIP	STATE		
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### **Notebook computers (6 to 8 pounds)**

The country might consider its options.

The competition included in this chart represents a recent survey conducted by Compcompetitor. When a vendor is unable to provide specific information about its product, the abbreviation NA (not applicable) is used. Contact vendor for further product information.

# Which UNIX® RDBMS did Hewlett-Packard®, IBM®, Unisys®, Data General®, AT&T®, Sun®, and Sequent® choose to demonstrate the power of their latest UNIX Systems?

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**IDC Study on UNIX OLTP**  
UNIX On-Line Transaction Processing at Multi-User UNIX Sites (January 1991) states that some 47% of sites running commercial applications on multi-user UNIX systems are running OLTP. The study reports that Informix is in use at more sites than any other DBMS for UNIX OLTP applications.

Within the past five months, every one of these companies selected and used the INFORMIX-OnLine database server to demonstrate to their customers the power of their latest UNIX systems. No other UNIX database product has been this extensively benchmarked—because nothing shows performance like OnLine.

### ► New TPC Benchmarks Used

In each case, the Transaction Processing Performance Council's rigorous TPC A and TPC B benchmarks—the new standard for comparing system and database performance—were used to highlight OLTP performance and database throughput.

### ► The Number 1 Choice for UNIX OLTP

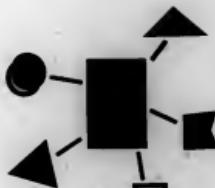
Informix is the number one UNIX OLTP choice. A January 1991 International Data Corporation (IDC) study shows that when it comes to UNIX OLTP applications, Informix products are installed at more than twice as many multi-user UNIX sites as our closest competitor. It's independent confirmation that thousands of companies worldwide rely on Informix-based OLTP solutions every day.

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**About the TPC**  
The Transaction Processing Performance Council (TPC) was founded in 1988 to define transaction processing benchmarks and to provide performance data to the industry. Today, 40 hardware and software vendors, including AT&T, Bell, Sybase, Data General, DEC, ASK/Ingres, Fujitsu, IBM, Informix, Hewlett-Packard, NCR, Olivetti, Oracle, Pyramid, Sequent, Siemens, Sun, and Unisys are members.



**TPC vs. TPC Benchmarks**  
The TPI benchmark is no longer the accepted benchmark for measuring database performance. The new TPC tests establish more complete, thorough specifications than TPI, leading to more objective, verifiable results for comparing performance between hardware systems and software products. TPC Benchmark™ A measures OLTP processing performance. TPC Benchmark™ B—similar to a batch test—focuses on database throughput.









# IN DEPTH

## High-tech heroes

Ten finalists for Computerworld Smithsonian Awards used technology to take on disabilities, illiteracy, environmental problems and other challenges

### Business and Related Services

#### Catalina Marketing Corp.

If you spend part of your Sunday mornings clipping coupons from the newspaper, Catalina Marketing Corp. has a way to let you get a little more sleep. Not coincidentally, Catalina's tactic also provides vendors with high-technology marketing techniques.

Called Checkout Counter, the turnkey system offered by Anaheim, Calif.-based Catalina uses proprietary hardware and software to link to a supermarket's point-of-sale scanning system.

Each participating store has a personal computer that monitors every product via its universal product code (UPC) as it passes through checkout. Catalina's database of UPCs tracks the delivery of a coupon based on brand purchases. The PC sends a message to a thermal printer installed at the cash register, and the customer

is handed a freshly printed coupon as he leaves.

For their part, vendors purchase product categories such as soap powder or frozen breakfasts. Catalina sells categories on a first-come, first-served annual contract basis, which guarantees the vendor exclusivity in the given category.

"We get feedback on very specific items," says George Loesch, business director at Campbell Soup Co. in Camden, N.J., which uses the system. "For example, if we purchase the frozen breakfast category, we have a record to show how frequently consumers are purchasing direct competitors' products."

Loesch adds that coupons are generated for Campbell's products based on which competitor's product is scanned into the system.

Checkout Counter runs on the premise that traditional mass marketing media is subject to waste. According to Loesch, only 3% of a company's targeted customers use newspaper coupons. —Sally Cusack

and bulletin board-style comments that can be read from any personal computer that has a communications package.

Users dial into Econet's California hub from a variety of X.25 public packet-switched networks, including Telenet. Users can also gain access to affiliated environmental networks in Canada, England, Sweden, Australia and Brazil. The monthly access fee for Econet is about \$10, which does not include fees for computer time.

Econet is making its presence felt among environmentalists. It is a collection point for documents submitted for the United Nations Conference on Environment and Development in Brazil, set for June 1992. "There's a tremendous exchange of information, and all the original documents relating to that conference are being posted on the network," says William Leland, Econet director and head of technical programs at the IGC.

Econet's Sparstation, outfitted with 2G bytes of storage, also hosts IGC's Peasocnet, an international peace network, and Carnet, a Central American information service.

Econet's operational funding, supported by foundation contributions and user fees, was about \$100,000 in both 1989 and 1990. —Jew S. Bowman

### Environment, Energy and Agriculture

#### Institute for Global Communications

Every day, environmentalists from around the world confer about such pressing topics as the destruction of the rain forests in Brazil, the water quality in Leningrad and the erosion of the ozone layer over Antarctica. The site of this "conference" is a Sun Micro-



systems, Inc. Sparstation computer at the San Francisco offices of the Institute for Global Communications (IGC).

The IGC's Econet electronic bulletin board system allows 2,100 users to post environmental news, international resolutions

### Education and Academia

#### IBM

In Daytona Beach, Fla., kindergartners and first-grade students are creatively writing and illustrating their own stories — often at a second- or third-grade level — using an interactive, personal-computer-based teaching system.

Called Writing to Read, the PC-based system is offered by IBM's Education Systems center. It lets students write anything they can say and then read what they wrote.

In an effort to help children learn more effectively, Dr. John Henry Martin, teacher and developer, developed the computer-based instructional learning system in the early 1980s. Writing to Read guides children a phonetic spelling methodology that permits them to write anything they can say, making a natural transition from phonemic spelling to standardized spelling.

Writing to Read provides a multisensory



presentation enabling children to see, hear and interact with the story as they write it. It tutors students using individual learning stations. In addition to a PC station, there is a work journal station, a writing and typing station, a listening library station equipped with cassette and recorders and a station for making words out of clay.

"The computer will repeat phrases and instructions and prompt the students as much as is necessary," says Phyllis Shavey, program administrator for Writing to Read in Atlanta.

Writing to Read is installed in 8,491 U.S. schools. The average \$15,000 setup includes nine IBM Personal System/2s, software, work journals, tape cassettes and recording equipment. —Sally Cusack



## IN DEPTH: HIGH-TECH HEROES

Finance, Insurance  
and Real Estate

### United Technologies Corp.

United Technologies Corp. is a mega-entity, incorporating more than 500 firms and spanning 100 countries. In a major demonstration of personal computer and local-area network technology, United Technologies threw out 13 mainframe applications in favor of a PC-based financial system that is being used by 3,000 employees.

The new system, the Consolidation and Reporting System (CARS), is used by company accountants, analysts, managers and executives in treasury, tax consolidation accounting and financial planning departments at United Technologies subsidiaries.

It allows them to collect, analyze, report and distribute financial and operating data formerly found on the mainframe.

### Manufacturing

#### Sverdrup Technology, Inc.

Jet engines are so large and their designs so intricate that even the most powerful supercomputers are too puny to model what goes on inside of them.

But at the NASA Lewis Research Center, the propulsion arm of NASA, a computer has been put to work reducing an engine design cycle process that can take as long as 15 years and cost as much as



several billion dollars to complete.

A Cray Research, Inc. Y-MP supercomputer at NASA Lewis simulates air flows between alternating rows of stationary and rotating blades, or stages, that make up the core of a jet engine's compressor. Compressor design is critical to engine performance because even small imbalances in air flow can greatly reduce the engine's efficiency and range. NASA senior aerospace scientist John J. Adamcays developed the "averaging passage" flow model, which greatly reduces the computational complexity of simulating multistage turbomachinery. Sverdrup Technology, Inc., research analyst Richard A. Macie implemented the model in a code called "MSTAGE," which exploits Cray's multiprocessor.

For compressor modeling, compressors were designed through a repetitive process of building, testing and correction. A single test and rebuild could take from six months to a year to complete.

"We can now obtain information on an

Users can now access intercompany foreign currency balances, critical tax planning data and consolidated product line information in a PC environment using a common tool and methodology.

Developed using Micro Control, a PC-based financial consolidation and management reporting package from IMRS, Inc., CARS uses customized communications software to allow users to access and transmit data on a 24-hour basis.

Mark S. Coran, vice president and controller at United Technologies, says the mainframe-based program was not a popular, user-friendly system. "The operating units did not use it," he says. "They just fed data into it." Coran says, "We decided to replace it with a product people would actually use."

CARS incorporates a distributed database operating over 16 LANs connected over a wide-area network. It includes more than 2,000 workstations in over 450 locations. Purchased last year, the final CARS installation will be completed by the end of 1991. — Sally Cawack

initial design through computer simulation, which allows the designers to make refinements before the experimental rig is built," Adamcays says. "This has reduced part of the design process from years to several days."

Previous models could simulate the air flow through just one stage of a compressor, which can contain as many as 12 stages or 24 rows of blades. But with the eight-processor Cray Y-MP and the multi-processing MSTAGE code, NASA has been able to simulate four different stages in the time previously required to simulate one blade row.

Macie says the advent of massively parallel systems will allow much larger simulations to be done in the near future. — Paul Gillin

### Medicine

#### Dragon Systems, Inc.

Laura Harris was born without fingers on her left hand. In her right, she has carpal tunnel syndrome, a painful degenerative disease of the wrist's small bones and muscles. Unable to write or type, she once worried that these disabilities might hinder her education.

Tell that to the 20-year-old Harvard University graduate now. Tell it to her Intel Corp. 60386-based personal computer, too. It's loaded with Dragon Dictate, a \$9,000 voice recognition system from Dragon Systems, Inc. in Newton, Mass.

Without ever touching a keyboard, Harris produces everything from letters to research papers to agendas for the several campus organizations to which she belongs. Dragon Dictate listens to, veri-

### Government and Nonprofit Organizations

#### U.S. Office of Personnel Management

Manual application processing for federal jobs used to take months, forcing qualified candidates to accept other offers long before a government job became a reality. Now, thanks to an automated staffing network put in place in 1984 at the U.S. Office of Personnel Management, the application process takes less than two days, saving the federal government more than 1,000 man-years and the country approximately \$50 million compared with prior processing methods.

Established under the oversight of the Office of Personnel Management's Staffing Service Center, this distributed system is based in Hewlett-Packard Co.'s HP 3000. It accepts scanned applications and grades and rates them according to qualification. The Staffing Service Center says it has processed about 20 million documents to date without losing one.

Once an application is processed, it is submitted into the Automatic Application Referral System and distributed to federal agencies. "As soon as the application

hits the system, potential employees can be interviewing in days," says Ken Mayhew, Staffing Service Center director.

Using the automated staffing network as a base, the Staffing Service Center has launched other innovations.

One user-friendly innovation, the Job Information 2000 system, is a one-stop contact for federal jobs, Mayhew says. People can call, listen to information about available jobs, leave a message and receive an application within days.

Job hunters can go to any of the Office of Personnel Management centers around the country and use touch screens, he adds.

Combining personal computers and synthetic voice and touch-screen technologies, the system makes federal job information publicly available. — Jodie Near



local hot line numbers and resources.

"The ability to key into the local community so the person viewing gets the closest and most available hot line number in the area is absolutely vital," says Abigail Newman, chairwoman of the National Coalition for Literacy and a professor at Indiana University at Bloomington.

PLUS, a joint public service campaign of Capital Cities/ABC and the Public Broadcast Service, began in 1985 as an 18-month pilot project. Now entering its sixth year, the project's themes have expanded to include civic and youth literacy, family reading and literacy for the future and forces.

Through the Master Key system, PLUS is called to Dragon Dictate, which requires 8M bytes of memory, remembers the words in words, not the letters. It guesses at new words by matching sounds to those it already knows.

The program runs in the background of word processing, spreadsheet and database packages. It has a library of the 25,000 most common English words, with an additional 80,000-word dictionary. It can learn 5,000 more user-defined words. Available since March 1990, it has also found a market among poor typists and hands-busy workers. — Kim S. Nease



The software encodes the public service announcements with a special signal, and when the spot is aired on the network, that signal is picked up by decoder software at the local station. This interaction automatically triggers the station logo and a local literacy hot line number.

The National Literacy Hot Line has logged in more than 750,000 calls on the 800 number managed from a Lincoln, Neb., contact center. PLUS has 527 local task forces, with endorsements from 138 organizations. The U.S. Department of Education credits PLUS with more than 1 million new students in adult literacy programs. — Maryann Johnson

**Science**  
**Wistar Institute**

Small virus. Big problem.

For years, the structure of the human adenovirus has baffled researchers because it is relatively large for a virus—and incomplete.

The adenovirus is not just a laboratory matter; its effects are traceable in studies from conjunctivitis to dysentery, and it poses potentially life-threatening dangers to victims of acquired immune deficiency syndrome.

Now, scientists using a three-dimensional imaging application have mapped much of the adenovirus and have found areas of protein structure that may be a target for drugs designed to combat the virus' ability to reproduce itself.

Researchers at the Wistar Institute in Philadelphia and the European Molecular-Biology Laboratory (EMBL) in Heidelberg, Germany, teamed up to create the first 3-D model of the adenovirus using Stardent Computer, Inc.'s Application Visualization Software on a Digital Equipment Corp. VAX to put together a graphics model of the virus.

"The virus has 11 different proteins, and with the protein copies, there are more than 3,000 different protein molecules. We could never handle all that without graphics," says Dr. Phoebe Stewart at the Wistar Institute. "The technology is really a big leap forward."

The project grew out of 17 years of

adenovirus study by Wistar's Dr. Roger Burnett. Stewart says, Burnett and Stewart used X-ray crystallography to begin mapping the virus, then compared those results with scans done by an electron microscope.

The two then collaborated with Dr. Stephen Fuller at EMBL, who wrote programs to handle the large amounts of data gathered in the studies. He turned to the Stardent application to convert the information into graphic form.

The research team will continue to employ the imaging technology to map any remaining undiscovered parts of the virus and better assess which areas may be most susceptible to attack by anti-viral drugs, Stewart says.

Although the adenovirus is less dangerous than many other viral infections, the work on the virus still has implications for broader studies of viral effects, he says. "One hope is that others can take this to work on other viruses using the basic principles we've uncovered here."

—Donald St. John

**Transportation**

**Bechtel Group, Inc./  
Parsons Brinckerhoff, Inc.**

When George Jackson talks about information systems putting him in the hole, it's actually a good thing. That's because Jackson is manager of technical computing for Boston's Central Artery/Tunnel Project, a 10-year undertaking by Bechtel Group, Inc., and Parsons Brinckerhoff, Inc., that will revamp Boston's clogged Central Artery roadway as well as add a third car tunnel across Boston Harbor.

Jackson is using a combination of computer-aided design (CAD), automated mapping, three-dimensional modeling and image processing to speed construction under a \$4.9 billion budget.

The \$4.9 billion tunnel project, the largest effort of its kind in the U.S., is further complicated by the fact that it is under construction in a densely populated, historically significant urban area. Its design requires numerous changes to satisfy the concerns of residents and regulatory agencies.

Jackson's team turned to Graphics Design Systems, an object-oriented CAD sys-

tem from McDonnell Douglas Systems Integration Co. that helped create a base map of the projected construction area. The system allows engineers to update and transmit the latest design information automatically.

Imaging, combined with the automated mapping, provides engineers with access to more than 30,000 historical reference drawings. An engineer can use them to check electric, sewer and water lines or foundations of nearby buildings, Jackson explains.

The 3-D modeling has been integrated with Bechtel's own "walk-through" software, enabling planners to computer-simulate a stroll through the completed project before a single brick is put in place.

Jackson says designers used the walk-through feature to persuade federal agencies to modify sign size and placement requirements for the tunnel. The agencies wanted the group to adhere to normal above-ground highway regulations, which would have caused problems in a tunnel.

The system runs in a distributed client/server environment from Digital Equipment Corp. A Microvax 3600 and a 3900 serve as servers hooked to about 60 workstations and about 30 personal computers. —Carol Hildebrand



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# COMPUTER INDUSTRY

## NATIONAL BRIEFS

### Deflated expectations

The recession has battered Control Data Corp.'s computer group's hopes for a 10% revenue growth this year into a flat line, James E. Ousley, president of CDC's Computer Products Group, said last week. On the plus side, however, Ousley said, CDC is investigating a strategic partnership with a networking company, similar to the company's relationships with workstation maker Silicon Graphics, Inc. and RISC player MIPS Computer Systems, Inc. Last year, Ousley's Computer Products Group contributed \$589.7 million of CDC's \$1.691 billion bottom line. Ousley also said the time it will take AT&T and NCR Corp. to work out a merged infrastructure could give CDC and others developing Unix multiprocessor and reduced instruction set computing-based systems "a two-year window of opportunity."

### Search for tomorrow

In search of streamlined operations, tightened focus and heightened productivity, Unix vendor The Santa Cruz Operation earlier this month formed four product line business units: Services, Distributed Corporate Computing, General Business Systems and Complementary Products. The new Distributed Corporate Computing unit will focus on the recently formed Advanced Computing Environment consortium.

*More briefs on page 103*

## IBM rallying to clear muddy software name

BY PATRICIA KEEFE  
CW STAFF

Personal computers are rapidly becoming the platform of choice on which a good chunk of many corporate strategic initiatives will rest. And while long-term information systems partner IBM may appear to be in good shape here, in actuality it is not.

That is because application software, not hardware, is what drives long-term client/server planning.

Nowhere is it more obvious that IBM is driven by hardware than in the desktop market. IBM continues to reign on the desk as the undisputed market share leader in DOS-based PCs. However, it is so lacking in presence

on the applications side of the house that what it has can barely cast a shadow on a hot day.

Outside of Displaywriter, which played to a captive audience of IBM users for years before sales started dropping off, only in the last few years has IBM begun to amass any respectable market share in any applications segment.

According to analysts, IBM's most recent entries — the as-yet-unreleased Signature word processing package, just-shipped Hollywood graphics program, toddler personal information manager Current, and multimedia application Storyboard Live — hold the most promise for building up its aemic market presence.

### All in the family

After two years, IBM's Desktop Software Group has built a stable of seven packages covering word processing, multimedia, graphics, accounting and personal information management.

Product name	Date shipped	Price	Development partner
Displaywriter	April 1984	\$495	Internally developed
Signature	1988	\$495	Internally developed
Storyboard Plus	April 1987	\$455	Internally developed
Current	May 1989	\$495	Internally developed
Storyboard Live	Nov. 1990	\$495	Krepec Publishing, Paradise Island, Bahamas
Hollywood	1991	\$495	Internally developed
Platinum Series	March 1990	Average \$725	Advanced Business Microsystems, Camarillo, Calif.

CW Chart: Davies St. John

IBM is the first to acknowledge that it may have already lost out in some markets. "As good as we hope to become and will be in some areas, some cus-

tomers will already have made some investments [in other products]. They want to pick and choose from among the market.

*Continued on page 104*

## Fujitsu open for business in Canada

*Analysts see the move as a possible play for U.S. computer market share*

BY JEAN S. BOZMAN  
CW STAFF

Fujitsu Ltd., one of the world's largest computer manufacturers, is setting up shop in Canada in what some industry analysts said is a trial run at the U.S. computer systems marketplace.

Fujitsu Canada, Inc., which is a wholly owned subsidiary of the \$20 billion Japanese computer and communications giant, made its debut in late April with the opening of a 30-person sales and support office in Toronto. But

the Canadian move is seen as part of a global thrust to prove that Fujitsu can sell systems under its own label as well as through resellers.

### Preparing for U.S. entry

"The needs are being planted," said Frank Gens, an analyst at Technology Investment Strategies Corp., a Framingham, Mass.-based market research firm. "With the purchase of ICL [Ltd.] in Europe and the recent entry into Canada, all the pieces of Fujitsu's world puzzle indicate

that they're creeping, step-by-step, into the U.S. systems market."

Back home, Fujitsu owns about 25% of the Japanese domestic computer market, outpacing IBM Japan, Hitachi Ltd. and NEC Corp., analysts said. However, direct sales of Fujitsu large systems outside Japan occur in only a few places: Australia, Spain, Germany, the Philippines, Singapore, South Korea and China.

In Canada, Fujitsu had been selling small systems, such as

personal computers, disk drives and cellular telephones, until a small marketing team with experience selling Fujitsu systems in Australia and Japan arrived last August. Recently, Fujitsu Canada hired as its new president David Sowery, a former IBM Canada executive with 13 years of experience in selling systems to large end-user sites. "They're looking very much to be a full-service supplier," said Marleen Mestrom, an analyst at IDC Canada Ltd., in Toronto. "Rather than making a straightforward box sale, they're interested in making a partnership with the user to encourage sales of a broader product line."

*Continued on page 102*

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- Roland Heiret, IBM's Director of Software and Support for the Mid-Atlantic states, will discuss "IBM: Meeting the Customer's Needs".
- Jeffrey Tash, President of Database Decisions, will discuss "The Method Behind the Madness: How SAA, CASE and 4GLs combine, complement and conflict with each other".



## Fujitsu

CONTINUED FROM PAGE 101

Fujitsu Canada said it is willing to sell a broad variety of systems, initially targeting the banking and insurance industries, government agencies and utility companies. Toward that goal, Fujitsu has almost doubled its Canadian work force: Some 30 new salespeople staff the new systems group, in addition to the 45 employees who were already selling and servicing computer peripherals.

The company already has roots in U.S.-soil: San Jose, Calif.-based Fujitsu America, Inc. sells PCs, peripheral devices and communications gear to the U.S. market. With few exceptions, it has not attempted

to sell midrange computers or even large-scale mainframe and vector processor systems to U.S.-based companies — at least, not so far.

However, analysts and sources at Amdahl Corp., in which Fujitsu owns a 44% stake, said there are no marketing agreements that would prevent Fujitsu from selling Unix-based servers and workstations directly to U.S. customers.

That is precisely what the company is doing in Canada. Fujitsu's file servers, workstations and mainframes will be sold in just two flavors, and Fujitsu's proprietary MSP operating system, said Manuel Cerilles, marketing director at Fujitsu Canada.

"They don't want to miss out on the open systems wave," noted Bob Djurdi-

vic, president of Annex Research, Inc. in Phoenix. "The Unix environment doesn't carry as much baggage as the IBM/MVS world. Customers are free to consider Unix for new systems, increasing the size of the potential customer base."

Adhering to Unix System V standards would ensure Fujitsu's ready supply of off-the-shelf Unix applications, several analysts said. Fujitsu's mainframe version of AT&T's Unix, UX, is slated for shipment later this summer.

Fujitsu has been very active in Unix International, an association of firms allied with AT&T's Unix System V Release 4 operating system. In April, Fujitsu Ltd. purchased a small piece of Parsippany, N.J.-based Unix Systems Laboratories, Inc., an AT&T spin-off.

"Fujitsu has made a conscious decision as to which countries to proceed in," Cerilles said. "The main reason we came to Canada is that our computer peripherals group has been manufacturing printers, cellular phones and disk drives here for five years, and we've been fairly successful," he added. "We said, 'All right, this is the next progression of our presence in Canada, to sell our systems products here.'"

Fujitsu Ltd. will avoid selling IBM-compatible systems in North America, in part to avoid sales conflicts with Amdahl's Canadian subsidiary.

"There is no relationship at all between Fujitsu Canada and Amdahl Canada," Cerilles noted. "They are completely separate companies."

## INTERNATIONAL BRIEFS

### Trilateral transmission

► Japanese long-distance telecommunications firm Daishi-Denshin, Inc., U.S.-based US West and Canada's Rogers Castle, Inc. said they plan to cooperate in offering cellular telephone rental service in one another's headquarter countries, the Japanese company announced earlier this month. Under the agreement, the firms also plan to exchange technical personnel and know-how.

### Going Japanese

► Minneapolis-based network server manufacturer Tricord Systems, Inc. last week announced the opening of a Japanese subsidiary: Nitto Tricord Systems Kabushiki Kaisha (Tricord KK), headed by Japanese computer industry veteran Masatoshi Fujino, will market its product's implementation through a series of niche-specific master distributors which can also develop its own highly targeted reseller network, according to Tricord. The terms said by Tricord KK will be manufactured by Kubota Corp., the Japanese industrial firm that recently made a \$3.4 million equity investment in Tricord and provided \$3.5 million in debt financing support for Tricord and Tricord KK.

### Tandy for Tandy

► Personal computer and consumer electronics vendor Tandy Corp. is about to open its first European manufacturing and repair plant — a \$4.6 million facility in East Kilbride, Scotland. The new Tandy plant, which is the firm's 30th plant worldwide, expects to employ as many as 250 people when it is in full production — manufacturing, distributing, servicing and repairing PCs for the European market. Production of Tandy's Victor line of PCs will start up before the end of the calendar year.

### MTI in Germany

► Aiming to strengthen its German business base, Japan's Nippon Telegraph and Telephone Corp. (NTT) said it has applied to establish a new subsidiary, NTT Deutschland GmbH, in Dusseldorf, Germany. Capitalized at \$769,231, the company will be headed by Nobuyuki Sakuma and will be looking to grow its employee roster to five or six people, including locals.



COMPUTERWORLD

## EXECUTIVE CORNER

**Canadian firm names Oltman CEO**

Ottawa-based systems integration firm SHL Systemhouse, Inc., earlier this month named John Oltman, manager of worldwide integration services at Chicago-based Andersen Consulting, as its new chairman and chief executive officer. The 21-year Arthur Andersen Worldwide Organization veteran replaces Roderick Bryden, who announced his resignation last January.

As of this month, The Ultimate Corp. has two new presidents. Geoff Bowersman has been promoted to president of International Operations at the East Hanover, N.J.-based systems company in recognition

of his key role in the firm's expansion into Europe and the Soviet Union, according to Chairman and CEO Michael O'Donnell. In addition, John D. Smith, senior vice president of Ultimate's Customer Support Division, has been promoted to president of that division. Smith will continue to oversee all customer service operations and will also take on responsibilities with regard to corporate strategic plans and programs.

Akio Morita, co-founder and chairman of the board at Sony Corp., has been elected honorary member of the board of directors of The Institute of Electrical and Electronics Engineers, Inc. (IEEE).

Morita, whose honorary membership was bestowed earlier this month at the 1991 IEEE Honors Ceremony in San Francisco, is being recognized "for his distinguished leadership of Sony Corp. and the integration of emerging technologies into consumer electronics products," according to the organization.

Alan B. Salisbury is the new executive vice president and chief operating officer of The Microelectronics and Computer Technology Corp. (MCC) Salisbury, who served as president of the advanced technology research and development division of Comtel Corp. (now a part of GTE Corp.) prior to joining the Austin, Texas-based consortium, will share responsibility for MCC's day-to-day operations with CEO Craig Fields and Marketing and Services Vice President Barry H. Whalen.

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**NATIONAL BRIEFS**

*Continued from page 101*

**More loss is more**

► International player Fujitsu Ltd. is looking to "push the limits of electronic component technology" by packing "maximum processing power into a smaller package," Yoshi Honda said. To achieve the lofty goal, Fujitsu recently opened a new wholly owned subsidiary in San Jose, Calif., and named Honda its president. Fujitsu Computer Packaging Technology, Inc. expects to have 20 scientists on staff engaged in basic electronic interconnect research by fall.

**Whoops**

► The information services industry is growing — but not as fast as it used to, according to Mountain View, Calif.-based market research firm Input. While average annual growth during the 1980-1988 period was better than 19%, a recently released Input report and growth in 1990 came in just under 12%. Overall industry sales in the \$100 billion ballpark did not grow from showing the slowest year-to-year growth that the industry has experienced in the past 15 years, the report said.

Software sales are up 12% this year, says Input, which tracks software sales across the software industry. The report also finds that software sales are down 10% in the first quarter of 1990, while hardware sales are up 10%.

Source: Mountain View, Calif.-based Input, Inc.

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## IBM rallying

CONTINUED FROM PAGE 101

leaders," said David Cassano, director of product management at Stamford, Conn.-based Desktop Software Group and the right-hand man of its vice president, Fernand Sarrat.

In fact, the last decade has left IBM with such a spotted reputation in PC software development that, when it appeared Microsoft Corp. and IBM might go separate ways on OS/2, some users cautioned IBM not to do it alone.

"If I see a shrink-wrapped box with IBM's name on it, I have one of two things: It either doesn't work, or they got it from someone else," one user quipped.

Changing this perception will take some work. The prescription offered by Tim Bajarin, analyst at Creative Strategies International, Inc., will not provide overnight relief.

"They have to come out with as many innovative products as they can," Bajarin said. "They have to replicate that with as much third-party creativity as they can, and they have to establish their own lab because the profit lie in internal development."

IBM, to a great extent, has bought into this theory. In 1988, it launched as an autonomous unit the Desktop Software Group. The group spent most of its first year just getting organized and scoping out product deals.

Its existence is touted as evidence that

IBM finally understands that desktop software represents big bucks and that its development must be freed from the constraints of IBM's hardware strategy and overbearing bureaucracy (see story page 105).

As such, the Desktop Software unit and its head, Sarrat, are thought by many analysts to represent the one shining ray of hope IBM has for achieving some measure of recognition and leadership in PC application software. Sarrat and the unit are drawing raves in early reviews for its vision, strategy and potential.

"Desktop Software is commendable

humidity," observed Esther Dyson, editor of the "Release 1.0" newsletter. "It means they are serious about [software]."

In the short term, the laboratory is charged with quickly getting IBM into specific market niches, mostly through joint ventures with third parties. Once there, the goal is to stay competitive, Cassano said.

"We do not have today's 'start from scratch' effort in any major software segment," Cassano said. "We want products in the market now, rather than having to wait for long-term programming efforts."

The idea is to marry IBM marketing and the company's sense of family architecture to good third-party talent. So far, this approach has produced Current, Storården Live and Hollywood. All were purchased in various stages of development from external developers.

As a separate business unit, Desktop Software is able to avoid internal IBM wars over which technology is the "right" one. As evidence, Cassano said, users can expect his unit's applications to run under both OS/2 and Windows.

He also outlined the "major product segments" of greatest interest to IBM: word processing, presentation graphics, personal information managers, industry accounting and, eventually, databases. "We are still looking to come out with a line of the database area," he said. In the long term, analysts said, Sarrat is building the foundation for what Cassano has called a "world-class" programming group that will service IBM applications customers into the next century. This group also plans to more closely integrate the Desktop Software applications family via similar menus and commands.

### Necessary leadership

Sarrat's appointment as head of the unit is critical, analysts said. Industry veteran Stewart Alsop, editor of the "P.C. Letter" newsletter, said, "He is what IBM calls a 'wild duck.'" Sarrat recognized that IBM had little to leverage from a technical standpoint and that its development procedures are too bureaucratic and oriented toward system software. Alsop said, "He recognized that IBM was wrong and Microsoft was right."

This time, IBM is spending time listening to users. "We are focusing on what users want and starting with that as the design point," Cassano said.

Observers such as Alsop also said Microsoft's success with Windows was a strong motivator behind IBM's willingness to let Sarrat go his own way.

"Microsoft has succeeded in scaring the hell out of IBM and turning it into a decent software company," Alsop said, explaining that Microsoft forced IBM to change the way it specs products. "IBM feels for the first time that it is subject to someone else's whims, and it scares them. There is nothing like fear to motivate you to do the right thing."

IBM's PC software efforts also have a specially trained and organized sales staff and marketing force. One of the first things marketing did was revamp the packaging to focus more on product information and less on the IBM logo, Cassano said. After all, he noted, "We are only measured on our profit and loss, and a key measure [in determining that] will be customer satisfaction."

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<b>OTHER PROFESSIONALS</b>
RI. Medical Legal, Accounting Mgt.
RI. Educator, Journalist, Librarian, Writers
RI. Others _____
(Please specify)
<b>3. COMPUTER INVESTIGATION</b> (Circle all that apply)
Types of equipment with which you are personally involved as a user, vendor, or consultant.
<input type="checkbox"/> Home Computer
<input checked="" type="checkbox"/> Business Computers
<input type="checkbox"/> Mainframe/Small Business Computers
<input type="checkbox"/> Microcomputers/Desktop
<input type="checkbox"/> Communications Systems
<input type="checkbox"/> Office Automation
<input type="checkbox"/> Electronic Data Processing
<input type="checkbox"/> Other _____

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82. Educator, Journalist, Librarian, Student		
88. Others	(Please specify)	
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2. Microcomputer/Small Business Computer		
3. Microcomputer/Computer		
4. Computer Aided Design		
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## Desktop unit IBM's best shot

**S**warming from a string of failed or non-descript efforts in the microcomputer software arena, IBM finally got serious and launched the Desktop Software independent business unit in 1988.

The group has been pegged by many industry observers as IBM's last and best shot at achieving a presence in desktop software. David Cassano, director of product management at Desktop Software and a 16-year IBM veteran, recently spoke with Computerworld Senior Editor Patricia Keefe about the group.

Was personal computer software ever a priority for IBM? Is it now?

## IBM needs dose of software Rx

BY PATRICIA KEEFE  
CW STAFF

It does not take much looking to find specific examples of where IBM has stumbled in the software market; nor is it hard to find opinions as to why the computer giant has fallen flat on its face so far in desktop software. Until recently, industry veterans and other observers said, IBM has lacked the desire, the drive and the right combination of "stuff."

To be fair, IBM has barely taken a crack at desktop software. The company overmuch of its Personal Computer software infamy to a two-year effort to patch Tuxview, a character-based graphical icon environment announced in 1984 that IBM was never able to sell.

Until about two years ago, other IBM PC software offerings have been mostly ho-hum efforts, industry observers said.

"They never put any resources into developing their own software," said industry veteran Vern Rayburn, chairman of Software Corp.

IBM completely missed the software boat at the height of the mid-1980s, when there was a tremendous surge in creativity," said Tim Reipin, a vice president at Creative Strategies Research International, Inc. IBM is now trying to get back on board with its Desktop Software group (see story above).

"Here's this gigantic, sprawling hardware organization, and you might say, 'Why are they so stupid?' But the fact they have even [any] market share is amazing. No other hardware company has been successful in applications," said Stewart Alsop, editor of "PC Letter" newsletter.

Moreover, IBM's critics underscored that money is not everything. The starting point for most successful PC software firms was a garage, a beat-up computer and a handful of obsessed programmers. IBM has never come close to this model, former executives and analysts said.

"IBM isn't a force in any software market" because the best software springs from entrepreneurial environments, said Dan Kotsick, president of Meta Group, Inc., in Stamford, Conn.

Other successful applications software ventures have been launched by companies with a major presence in ancillary markets, such as Microsoft Corp. in operating systems and Borland International, Inc. in languages, Kotnick said.

We never really tried [before]. Our application software units in the past many times were asked to compete with hardware strategy. What's different about the approach with Desktop Software is that we look at it as a [separate] business. We made that decision because PC software was a good business — a fast business — and we wanted to participate.

### Why a separate business unit?

We were given independence so that we could operate a little quicker on our feet and not be encumbered with things that would slow us down. We want to work aggressively with groups in and out of IBM.

We have a specialized sales force as well as the leeway with marketing to operate in the market the way we want.

### How reliant is IBM on third parties in its desktop software development?

A large part of why this unit was created was to come out with exciting new applications, and our approach has been to work with creative outside developers. Developing products from scratch is not a priority. We want products in the market now.

How tied are you to Patriot Partners' development shell?



Cassano says his independent unit is quicker on its feet.

Not all at this point in time. We're tied to [specific] application markets and getting into them ... Right now, we're just like any other developer, looking at that and other options.

Does it matter in the long run if IBM becomes a force in the PC market? It's hard to say. It's very important for IBM to participate. Customers who buy solutions from us would like to buy both applications and hardware from IBM. And [given downsizing trend], the customer is saying, "What does IBM have to help us with this transition?"

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# 1991 Editorial Calendar

## (July-December)

### Product Spotlights/Buyers' Scorecards

PC Presentation Graphics Software	July 6	June 21	June 28
Executive Information Systems ( <i>Featuring Buyers' Scorecard</i> )	July 22	July 5	July 12
Storage Systems ( <i>Featuring Buyers' Scorecard</i> )	Aug. 19	Aug. 2	Aug. 9
PC Spreadsheets	Sept. 2	Aug. 16	Aug. 23
Imaging Systems ( <i>Featuring Buyers' Scorecard</i> )	Sept. 16	Aug. 30	Sept. 6
TCP/IP	Oct. 7	Sept. 20	Sept. 27
PCs and Workstations ( <i>Featuring Buyers' Scorecard</i> )	Oct. 21	Oct. 4	Oct. 11
Distributed DBMS	Nov. 4	Oct. 18	Oct. 25
Mainframes ( <i>Featuring Buyers' Scorecard</i> )	Nov. 18	Nov. 1	Nov. 8
LAN Operating Systems and Applications ( <i>Featuring Buyers' Scorecard</i> )	Dec. 2	Nov. 15	Nov. 22
Client/Server Application Development	Dec. 16	Nov. 20	Dec. 6

Editorial Contacts: Mary Brandel (Spotlights) (508) 879-0700 ext. 175 Michael Sullivan-Trainor (Buyers' Scorecards) ext. 229

### Integration Strategies

Integrating New Technologies	Aug. 12	July 26	Aug. 2
Integrating Manufacturing Systems	Oct. 28	Oct. 11	Oct. 18
Working with Commercial Systems Integrators	Dec. 9	Nov. 22	Nov. 27

Editorial Contact: Joe Maglitta (508) 879-0700 ext. 192

### Industry Closeups

Industry Closeup: Information Systems in State and Local Government	Aug. 12	July 26	Aug. 2
Industry Closeup: Information Systems in Pollution Control	Oct. 28	Oct. 11	Oct. 18
Industry Closeup: Information Systems in Media	Dec. 9	Nov. 22	Nov. 27

Editorial Contact: Lory Zottola (508) 879-0700 ext. 236

### Special Reports

Special Report: 10th Anniversary of the IBM PC	Aug. 5	July 19
Special Report: Annual Salary Survey	Sept. 2	Aug. 10
Special Report: Annual Job Satisfaction Survey	Sept. 9	Aug. 23
Special Supplement: Premier 100 magazine	Sept. 30	Aug. 16
Special Edition: Forecast '92 (combining Computerworld's Dec. 23 and Dec. 30 issues)	Dec. 30	Dec. 6

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"As we began to expand outside the immediate area into New Jersey and Delaware, our need to reach a wider technical base grew as well. Unlike our advertisements in Sunday editions of local metropolitan newspapers, our recruitment advertising in Computerworld draws qualified candidates not only from New Jersey and New York but also from all around the world. It's by far our single most-effective vehicle for reaching our target audience. Clearly, our recruitment advertisements in Computerworld cost less than in other newspapers and produce

- Joel A. Adams  
President  
Devon Consulting

higher quality responses. In the past two weeks, for example, nearly 20% of the resumes we received came from Computerworld alone.

"In our business, recruitment results like these are key. In 1990 we placed about 135 new starts in addition to the employees we already had in place. This year we expect that number to total 165 or possibly higher. To ensure that Devon Consulting continues placing the right professionals in the right jobs, we fully intend to run an ongoing recruitment advertising schedule in Computerworld. When it comes to advertising, we believe that consistency is just as important as the size, message, and vehicle.

"Overall, our Computerworld recruitment advertising fulfills a threefold purpose. First and foremost, it's invaluable in recruiting all the top technical talent we need. It also helps us gain share of mind among a highly qualified base of readers. Finally, we know our clients read Computerworld and view its advertisers as significant players in the industry. When they read our advertisement, then, they see Devon Consulting as an advertiser in the industry's trade journal. That kind of presence only enhances our company image."

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# COMPUTER CAREERS

## Networks aid hiring searches

BY CHRISTINE CASATELLI  
SPECIAL TO CW

**A**s companies try to lower hiring costs and cut the cost of finding a candidate who is the right fit for a job, information systems managers are dropping their competitive tradition and working together in regional networks.

Within these informal groups, hiring managers share resumes they've received and trade tips on finding good candidates. The networks offer a host of time-saving services to job seekers and managers alike.

These networks are especially useful in today's buyer's market,

The tight economy and high unemployment rate place more stress on the companies' search process, and the networks provide very useful ways to move candidate selection along.

In addition, technical job networks can offer companies substantial savings.

For example, Harvey Daniels, president of the Technical Recruiters Network in Chicago and manager of human resources at the Federal Reserve Bank, says he and other members find they can hire specialized professionals at a fraction of the usual \$17,000 it could cost to find each person on their own.

The drop in spending results from eliminating headhunter fees

and from splitting advertising and career-fair expenses with other companies, Daniels says.

"With this economy, we don't have a \$1 million or \$2 million recruiting budget, so the network became a necessity," says Nancy Thompson, executive director of the Southeast Employment Network in Atlanta and personnel recruiter at Cap Gemini America.

**A new twist**  
Technical recruitment networks offer a new twist: outsourcing services that help workers who have been laid off find jobs in other companies.

"Right now, we're using the network to place workers rather than to hire them," says Fred Rodriguez, corporate manager of staffing programs at Hughes Aircraft Co. in El Segundo, Calif., and a member of the Technical Personnel Committee in Los Angeles.

The network offers tremendous advantages for job seekers. A single telephone call to a member recruiter can put a candidate in touch with every other member, Thompson says. "You talk to one company, and you're virtually talking to 75."

One person who found a job as an information technology consultant through the Southeast Employment Network says that timing is everything.

First, Rose Russell spoke to a recruiter at Georgia Pacific

Corp., a member of the network, who helped her prepare on to Cap Gemini America.

It turned out that Russell's experience in systems analysis and methodology was a better fit for Cap Gemini at that point. "The network is a good way to find out what other companies need at the same time," she says.

The network, however, could work against some job applicants who are not as qualified as they claim to be, says Richard Bell, a member of the Southwest High-Tech Cooperative and a contract recruiter at Cap Gemini America.

"If you are not very good, it is entirely possible that your reputation will spread faster through the network than it would otherwise," Bell says.

Hiring managers involved in job networks say one major benefit is that they have realized is the ability to find highly specialized professionals. "We've become so specialized over the years, it's difficult to find individuals that exactly fit our needs," Thompson says.

One drawback to job networks is that they really only help place midlevel personnel. Bell says 95% of his network referrals are for midlevel computer staff positions, such as senior systems analysts or project managers. Companies typically recruit at colleges for entry-level jobs, and executive search firms usually help with senior management positions, Bell said.

Rose Russell is a free-lance writer based in Washington, D.C.

## How they work

**H**igh-tech job networks started to appear in big cities in the mid-1980s, when computer positions were plentiful and qualified people were scarce.

The networks are run by groups of IS hiring managers from firms in the same metropolitan area, which meet regularly to announce technical openings and to pass along information about available candidates.

Job seekers with at least two years of experience in computers or communications are added to the network when managers who were not able to hire them submit their names.

Some candidates are recruited on quickly in the network, while others circulate for months. For example, in the Southeast, people experienced in computer-aided software engineering and DBase II are always hot commodities, says Southeast Employment Network's Nancy Thompson.

### Network contacts

- Northeast MIS Network Group, New York, New Jersey, Connecticut — Contact: Robert Lehman (516) 221-3665
- Pittsburgh High-Tech Council, Pittsburgh — Contact: Holly Maier-Klein (412) 682-2064
- Private Industry Recruiter Association, Southern California — Contact: Sam Ousaki (408) 493-4715
- Southeast Employment Network, Atlanta — Contact: Nancy Thompson (404) 306-5400
- Southwest High-Tech Cooperative, Dallas/Ft. Worth — Contact: Richard Bell (214) 462-8807
- Technical Personnel Committee, Los Angeles — Contact: Bill Tidebeck (805) 967-6511
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# MARKETPLACE

## PCs are often pricier than they seem

BY LUCIE JUNEAU  
SPECIAL TO CW

**F**rom the moment a permanent computer stands in its place until an employee can make the best use of it, say number of expenses will crop up to test an information systems manager's patience as well as impact the company's coffers.

Consequently, when experienced IS professionals calculate the cost of installing new PCs, they don't stop at the cost of the machines. PC installation in-

cludes everything from peripherals to furniture to training.

Of these expenses, the largest hidden cost is training, according to IS professionals.

When Dorr-Oliver, Inc., in Milford, Conn., installed a new 3+Open network from 3Com Corp., it adopted Compaq Computer Corp.'s 386 machines. Users also had to contend with learning Microsoft Corp.'s Word as well as its Excel spreadsheet.

"We had cost overruns in the user training area," says Charles Laskey, director of MIS at Dorr-Oliver. "We anticipated the need

for some training, but the amount of training that users needed came as a surprise." The training portion of Dorr-Oliver's installation expenses ran about 30% over budget.

Another sometimes forgotten cost is the need for more than the minimum amount of memory and disk storage. Also, modems and add-in boards may be needed to connect the PC to a network, printer or scanner. Buyers who depend on vendors to provide technical advice may be disappointed when they discover that their vendors didn't mention

these details, says Franc Perdomo, technology coordinator specialist at consultant Towers Perrin.

In addition, IS professionals sometimes don't establish appropriate purchasing guidelines, so users can end up with systems that are not compatible with installed hardware or software.

"Organizations waste a lot of time because of the incompatibility of this application with that piece of hardware," confirms Howard Dittman, vice president of engineering at Aurora Pump in North Aurora, Ill.

The best way to avoid incompatibility problems is to set companywide or departmentwide standards for PCs and applications. If users adhere to these standards when purchasing, a company can avoid spending a time and therefore money trying to get new software or hardware products to work with existing products.

Less significant hidden costs can arise from the need to prepare the user environment for the new system by purchasing items such as furniture and air conditioners.

As ergonomics become an increasingly important issue, some cities are requiring companies to buy particular equipment as part

of a new system installation. A recent San Francisco law mandated that employers provide glare screens, chairs with back support and adjustable keyboards to any user who requests the items, says Mike Ackerman,

manager of support services at the San Francisco Chamber of Commerce.

For companies looking to install only a few PCs, the price of new furniture probably won't be prohibitive. But

managers anticipating the installation of multiple PCs should take the issue more seriously. Taking measurements and pricing furniture before purchasing the PCs will at least enable them to forecast accurate installation costs up front.

Other minor items can hike the total cost of PC installation. Towers Perrin experienced unanticipated air conditioning expenses after installing Macintoshes, Perdomo says. "The graphics department tends to work late into the night. They have four Macs working till about 10, and the general A.C. goes off at about 6," Perdomo says. The price of cooling the space for an additional four hours was a hidden cost of installation, he says.

Jeanne is a free-lance writer and editor based in Salem, Mass.

## Big surprises for small firms

**N**ot surprisingly, large organizations with departments dedicated to managing information systems find it easier to control installation expenses than do smaller companies that lack extensive in-house computer expertise.

"We avoid surprises by having the appropriate infrastructure in place to make sure we're managing growth," says Carl Wilson, senior vice president of management information services at Grand Metropolitan Food Sector. "We implement standards, provide training and implement applications with the right level of integrity and control," he says.

Smaller firms with less experience are more

likely to be caught off-guard. Dennis Love, vice president and IS manager at Acme Thread and Supply, Inc. in Los Angeles, found the expense of installing an IBM Personal System/2 in Acme's Honolulu office surprisingly hefty. About six months into the installation process, Acme found that 25% of its total installation expenses had been spent on training and program modifications and that those costs were still adding up.

"When installing a PC that will be used for order entry, invoicing, etcetera, in a small business, I would plan on the installation costs being at least as much as the hardware and software — probably more," Love says.

LUCIE JUNEAU

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## Freedom

FROM PAGE 1

**T**echnology in Gaithersburg, Md. "There are very few things that are either completely open or totally closed. The majority of the things are in-between, and users have to recognize that there is that continuum."

Eventually, many believe, the basic components of an open systems architecture will be worked out by users and various industry consortia and projects will formalize based on those definitions. Users will have the choices they want, and will be assured of mostly compatible systems — both in the new computers just coming out and in their existing, so-called legacy, installed base.

Vendors have split into two

leading industry groups, the Open Software Foundation (OSF) and Unix System Laboratories, Inc., to produce the premier definition of an open system based on different versions of the Unix operating system.

Although the groups are producing operating systems and other components of open systems that embody different approaches, executives from both camps said their operating systems are essentially compatible because they both abide by the same basic set of standards.

"The industry is coalescing in some pretty solid directions, but we have a long way to go," said Charles Gardner, director of information technology architecture at Eastman Kodak Co.'s Graphic Products Group in Rochester, N.Y. "Every vendor always implements something to

differentiate, so users need to be smart. They need to know what's standard and what's not."

However, that is not always easy to discern. With at least 15 different versions of Unix and three different implementations of the OSF's OSF/1 operating system in the works, it can be difficult for users to figure it all out. Because none of the OSF/1 versions are available yet, it is unclear how compatible they will all be. But the vendors involved have already stated that they will build "value-added" features on top of OSF/1.

### Maintaining standards

Vendors maintain that it is perfectly fine to differentiate, as long as the standards are maintained. "Interface can support many implementations," said Peter Cunningham, president of

Unis International, the industry consortium in Parsippany, N.J. "An application programming interface just says the interface has to be a certain way, and if you implement against that, it will guarantee interoperability."

But for now, that simplicity is just a promise. Complicating the issue is the jockeying for position under way among industry consortia, several of which are laying claim as the standard bearer of open systems.

"It's a time of real confusion, but that's OK," said Judith Harbin, vice president at Patricia Seybold's Office Computing Group in Boston. "The market is sorting itself out. Change is very painful, not smooth and neat. The world is just not that simple anymore."

Still, some skeptics question whether vendors are truly work-

ing toward openness or just hyping up this year's leading marketing term. "I don't think any vendor will sacrifice profitability to bring standards to the world," said Gerald Telefson, senior vice president at Telefson Consulting Group, Inc. in New York.

Many users do see progress, however, especially when today's systems are compared with those from even a few years ago. But there is impatience with what some see as the snail's pace of progress. To help push open systems along, a group of about a dozen large users will make public in early July a list of de facto and formal standards it wants vendors to implement — and a timetable by which the group wants them implemented.

*Next week: Vendors look for a proprietary edge to distinguish their open systems from others.*

## Too many cooks spoiling open systems broth?

**V**irtually everyone agrees that there are too many overlapping consortia trying to call the industry tune. But no one is exactly volunteering to go out of business, so the groups are jockeying for position to see which become the umbrella organizations that coordinate the most activities.

"There are too many standards groups and too many standards," said Ronald D. Lachman, executive vice president at Interactive Systems Corp. in Naperville, Ill. "We participate in about 25 groups, and I'm personally involved in four."

Does run high. Members pay \$2.5 million per year to belong to the Cambridge, Mass.-based Open Software Foundation (OSF) and between \$9,500 and \$25,000 per year for membership in the Corporation for Open Systems.

No one has an accurate count of exactly how many industry groups there are, but the number easily reaches about 50, including the following:

- 8Open Consortium Ltd. in San Jose, Calif., is the "gnome," as President Thomas Mace said, for getting independent software vendors to port to the Motorola, Inc. 88000 platform.

- Sparc International in Menlo Park, Calif., has taken the mantle of Scalable Processing Architecture development from Sun Microsystems, Inc. and put it in the hands of its 195 members.

- Advanced Computing Environment (ACE) has no centralized organization. ACE is made up of about 30 members that have agreed to sell computers based on either the Mips Computer Systems, Inc. architecture or Intel Corp.'s 80286, 80386 or 486.

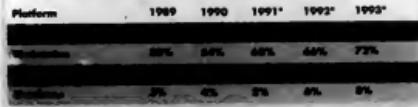
- The Corporation for Open Systems in McLean, Va., with more than 50 members, sees itself as a forum for users and vendors to come together and resolve issues. It has a technical program based on open source products that adhere to Open Systems Interconnect or Integrated Services Digital Networks.

- X/Open Consortium Ltd. in London, developed the X/Open Portability Guide

### Open systems dynamics

*Demand for open systems is driving up market share for Unix-based systems, particularly in the workstation and minicomputer segments.*

Percent of installed computer platforms running Unix

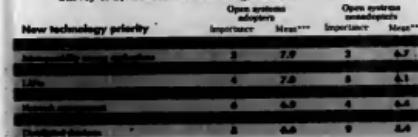


*The battle for control of the movement has forced major vendors into the opposing camps of the Open Software Foundation and Unix International, although a number of companies have a foot in each group.*



*Minicomputer technology investment priorities for the next three years are remarkably similar for both open systems adopters and nonadopters.*

Survey of 2,750 U.S. businesses (published October 1990)



(XPG), which includes various interface specifications. XPG has been adopted by 19 standards far.

• Unix International in Parsippany, N.J., has some 230 members, virtually all vendors. Unix International gathers requirements for what its members want to see in AT&T's Unix System V and then gives those requirements in the form of a "road map" to Unix System Laboratories, Inc.

• The OSF calls itself a "member-sponsored research and development organization aimed at bringing global accep-

tance" to open software. About 60 of its 300 members are user organizations.

• The National Institute of Standards and Technology (NIST) in Gaithersburg, Md., is a U.S. government agency. NIST holds so-called "implementor's workshops" to help reach consensus on how vendors will actually implement standards.

• Unixform in Santa Clara, Calif., was originally a technically oriented group made up mostly of Unix programmers. Currently, it is trying to take on a general role of promoting Unix and open systems.

## Open book on open systems

**A** big part of the confusion in open systems revolves around defining the term. Virtually everyone, it seems, has his own take on what an open system is.

Still, some agreement is being reached. Based on interviews with more than 40 users, consultants, vendors and consortium representatives, the following definition is pretty much agreed on:

An open system has three basic criteria: interoperability, scalability and portability. That is, it communicates with other systems, both open and proprietary; it allows a choice of anything from a desktop computer to a mainframe; and it allows software to be run across the board without being modified for various hardware systems.

Also, an open system is precisely that: an open system. It encompasses a wide range of hardware and software, from operating systems to databases and applications, all of which meet the three criteria above. The Unix operating system, widely heralded by some as the answer, is only one part of the equation, most people agreed.

The arguments begin when a fourth item is added to the definition. Some users insisted that a truly open system is based on vendor-neutral standards achieved by consensus, such as the International Organization for Standardization's Open Systems Interconnect model for communications. Furthermore, proponents said, these open standards must be controlled by consortia, not by any one vendor.

However, some insisted that the industry cannot wait for formal standards to be developed because that takes too long. What is needed in the interim are products that reflect some generally agreed upon ways of doing things, even if they are not yet defined on written standards.

## NEWS SHORTS

### Travelers to cut IS staff

The Travelers Corp. said last week it is trying to lighten the ranks of its mid- to high-level information systems management to reduce costs. In a prepared statement, the Hartford, Conn., firm said it will try to trim ranks up to 300 of the managers to take advantage of its retirement program. A spokesman said the company is moving the move because a "significant" part of the overall IS budget is tied to those salaries, although he would not provide details. The 300 managers represent about 9% of Travelers' 3,400-person IS work force.

### No surprises in after-hours trading

After a week of computerized after-hours trading, the New York Stock Exchange (NYSE) said the extra-hour sessions were as expected. Since the extended hour was added June 13, the exchange has bought an average of 432,500 shares for the first after-hours segment and 1.5 million shares for the second. Assessing its trading day two hours ago as the NYSE's effort to win back individual and institutional investors who now conduct an estimated 15 million to 20 million orders on other exchanges when the NYSE is closed.

### Apple cuts will cost Sculley

Apple Computer Inc. began its first wave of 1991 layoffs last week, involving 900 plus jobs to employees. However, 300 more layoffs are expected in July, an Apple spokesman said last week. By May 1992, 1,500 jobs will have been lost through layoffs and attrition, resulting in a 10% overall reduction from Apple's May 1991 work-force level of 15,600. Apple also announced last week that Chief Executive Officer John Sculley would be taking a 15% pay cut, effective June 25, reducing his salary from \$2.3 million to \$1.9 million.

### Hospital wins in faulty-system case

St. Luke's Hospital in Saginaw, Mich., won a judgment of \$485,000 in damages last week against SMS Computer Systems, Inc., a Malvern, Pa.-based systems house. The suit, brought by St. Luke's in 1987 and decided by a court-appointed arbitrator, concerned the hospital's 1984 contract with Computer Synergy, Inc. for an integrated hospital information system. Computer Synergy was acquired by SMS in 1985. The hospital argued that the system failed to perform as contractually required.

### Ocean COO moves to Forrester

Ocean's loss is Forrester's gain as Neal Hill has left Ocean Research Corp., a Woburn, Mass.-based software development company. The former chief operating officer will join Forrester Research, Inc., a consulting firm in Cambridge, Mass. Hill will take on the position of senior analyst in Forrester's Software Strategy Service.

### Adisape legal counsel dies

Milton R. Weisel, legal counsel to the Adisape trade association for the computer software and services industry, died recently. Weisel, 67, was special assistant to Adisape President Lorraine James and had been with Adisape since 1965. As general counsel for the association, Weisel most recently led Adisape's efforts to establish an Alternate Dispute Resolution program and served on the group's foundation board of directors.

### Cox buys Teleport

Merrill Lynch & Co. and Cox Enterprises, Inc. last week announced that they have signed a definitive agreement for Cox to acquire a 12.5% equity interest in the stock of Merrill Lynch's wholly owned subsidiary, New York-based Teleport Communications Group. Teleport owns and operates fiber-optic networks in 17 U.S. cities. The networks serve primarily as backhaul facilities to customers also using local telephone company networks. As part of the transaction, Merrill Lynch and Cox said they will provide \$80 million in additional funding for future Teleport expansion.

## Hackers promote better image

BY MICHAEL ALEXANDER  
CW STAFF

HOUSTON — Three self-proclaimed members of the Legion of Doom, one of the most notorious computer hacker groups to operate in the U.S., said they now want to get paid for their skills. Along with a former securities trader, the three members launched a computer security firm last week called Comsec Data Security that will show corporations how to keep hackers out.

"We have been in the computer security business for the last 11 years — just on the different end of the stick," said Scott Chasin, who said he once used the handle Doc Holiday as a Legion of Doom member. The group has been defunct since late last year, Chasin said.

The start-up firm plans to offer systems penetration testing, auditing and training services as well as security products. "We have information that you can't buy in bookstores. We know why hackers hack, what motivates them, why they are curious," Chasin said.

Already, the start-up has met with considerable skepticism.

"Would I hire a bank breaker to be a security guard at my bank?" asked John Blackley, information security administrator at Capital Holding Corp. in Louisville, Ky.

"If they stayed straight for five to 10 years, I might reconsider, but 12 to 18 months ago, they were hackers, and now they have to prove themselves."

"You don't hire known ne'er-do-wells to come and look at

part with Comsec," Sutton said.

Federal law enforcers have described the Legion of Doom in indictments, search warrants and other documents as a closely knit group of about 15 computer hackers whose members rerout-



*Launching a security firm (From left) Kenyon Shulman, Scott Chasin and Caris Gagnon, former members of the Legion of Doom, with Robert Cappa*

your system," said Tom Pele, an information security specialist at General Motors Corp. "The Legion of Doom is a known antiestablishment group, and although it is good to see GM would not have a capitalist best, GM would not have a capitalist best."

Comsec already has three contracts with Fortune 500 firms, Chasin said.

"I like their approach, and I am assuming they are legit," said Norman Sutton, a security consultant at Leemah Datacom Corp. in Hayward, Calif. His firm is close to signing a distribution

ed calls, stole and altered data and disrupted telephone service by entering telephone switches, among other activities.

The group was founded in 1984 and has had dozens of members pass through its ranks. Approximately 15 former members have been arrested for computer hacking-related crimes; three former members are now serving jail sentences; and at least three others are under investigation.

None of the Comsec founders have been charged with a computer-related crime.

## Lotus notes

FROM PAGE 1

the product would be positioned as an intermediary solution pending the release of a corrected Officewision LAN 2.0.

Analysts agreed that IBM has to provide an update on Officewision LAN 2.0 and OS/2, which has already suffered at least three delays. "If IBM does not have any concrete, substantive announcement [this] week, it will clearly be a fiasco," the source close to IBM said.

There will be an announcement, but whether Lotus will be part of it is uncertain. The problem then, is the extent to which IBM is willing to highlight the Notes contribution.

Working this through "is in the best interests of both Lotus and IBM," said Stuart Woodring, an analyst at Forrester Research, Inc. He added that both firms want to move forward.

"Lotus wants this deal for exposure and distribution, not the

revenue," said Woodring. "Notes has yet to establish the beachhead that it needs to invade corporate America."

### Strong indications

At an analyst briefing last May, IBM gave strong indications that it would respond to user requests for an "Officewision Lite" and/or a low-cost, low-level entry point to Officewision, several attendees said.

IBM also wants access to Lotus' CC-Mail electronic-mail technology. Mail is one of Officewision's missing building blocks. Many companies need to choose an E-mail system before they can begin to consider an office automation package, Duxbury said.

At that May briefing, Tony Mondello, IBM's Programming Systems Director of Office Systems Development, responded to a question about IBM's interest in CC-Mail by saying that he would recommend it to customers, several attendees said.

The anticipated licensing ar-

rangement with Lotus will be handled by IBM's Desktop Software Group, according to a source close to Lotus. The Milford, Conn.-based Desktop Software Group is charged with licensing technology from third parties for repackaging under the IBM logo.

### Not ready

A second source close to Lotus said the company is ready to roll out its "Notes SWAT team" as soon as they get the green light from IBM.

IBM, on the other hand, is offering specific pieces of technology, including Notes' database engine, asynchronous terminal support with network security and a graphical front end to the Notes client, according to a source close to IBM.

In addition, IBM is rewriting chunks of Officewision code, currently developed under C, in Borland International, Inc.'s C+++, sources said. Borland recently announced that it had agreed to port C++ to OS/2.

# IBM stung

FROM PAGE 1

than the estimated 14,000 employees to leave IBM over this year through a voluntary program.

IBM's immediate financial problems are, to a great extent, the result of the current lackluster mainframe product transition, analysts said.

Demand appears solid for the fully equipped Enterprise System/9000 models that will ship

competitive pressures and product transitions, in addition to the mainframe line. While several analysts agreed, one also suggested that IBM's 1991 performance falls a bigger story.

"There's a long-term transition happening here" as the revenue mix shifts from almost exclusive reliance on proprietary, high-margin products to an increasing percentage from standard-based products, said Frank Gens, vice president at Technology Investment Strategies Corp. "The profit implications of that are pretty clear. Margins will be much thinner."

#### Surfacing on mainframes

Gens and other analysts said that while IBM's current financial problems have been caused by competitive pressures in most industry segments, the mainframe business shoulders much of the responsibility. Some estimated that the large systems and its installed software and maintenance account for about half of IBM's annual revenue and profits.

James Casella, vice president at Gartner Group, Inc., said the mainframe transition illustrates a larger problem he calls "architectural gridlock," which has showed up in other product lines.

Casella said IBM announced not only hardware but also software enhancements that it cannot deliver on time.

As a result, it has only a promise of new functionality to sell now. The actual systems it can deliver are commodities without those enhancements.

"They can't break out of a commodity-like marketplace," Casella said, "and they are not structured to be a structured company. They are structured to be a premium-price house."

Company executives acknowledged that some large systems customers put off mainframe purchases until the first half of 1991 but said it was strictly because of a soft economy.

"The customers are postponing buying machines that would have purchased for sure," said Irving Wladawsky-Berger, assistant general manager of development at IBM's Enterprise Systems Division.

IBM attributed its financial problems to a weak economy,

U.S. ES/9000 installations	
Replace 4300 series	43%
Replace 5000 series	12%
Replace 3000 series	30%

SOURCE: Computer Strategies

later in the year, several analysts said, so they expect an upswing in mainframe sales. But currently available ES/9000s did not sell as IBM had hoped during the first half of the year.

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# Net plans get cool reception

IBM's announcements strike industry as restrictive, disappointing

BY JOANIE M. WEIXLER ■

CHIEF WRITER

NEW YORK — IBM made several networking gestures last week that analysts described as conservative, ho-hum and predictable.

Although they acknowledged that IBM's moves in the frame-relay arena, Transmission Control Protocol/Internet Protocol (TCP/IP) routing and enhanced Netview management will benefit users, observers called the company's noncommittal ship dates and limited product scope disappointing.

IBM's announcement of two beefed-up models of its 3745 Communications Controller that offer 50% to 300% performance improvements is "not very new," one analyst said. But he cited hefty \$42,000 to \$72,500 upgrade prices as a drawback.

While IBM announced its intention to put a frame-relay interface on the 3745, it gave itself two years of ship-date elbow-room. No mention was made of putting a complementary frame-relay interface on the 3174 and 3172 cluster controllers.

"This is restrictive because the whole point of frame relay is to be flexible, to allow where you can direct your information flow," said Mark Leary, director of communications research at Technology Investment Strategies Corp. in Birmingham, Mass.

Steven A. Taylor, president of Distributed Networking Associates, a consultancy in Greenwich,

Conn., said the 3745 is an appropriate initial frame-relay platform because "it opens up the technology to the large installed base of 3745s" but "doesn't address the flatter" topology IBM advocates.

Frame relay is a form of packet switching that is a faster alternative to X.25 technology. Transmeta Networks, Equipment Technologies, Inc. Spacetrans, on July 26. Users will gain a direct link to

Northeast Consulting Resources, Inc. in Boston. "The real backbone continues to be SNA, and wrapping the TCP/IP in SNA is a real cycle log."

On the network management front, IBM said it will ship Netview Service Points on its RISC System/6000 AIX platform, as well as the Sun Microsystems, Inc. Spacetrans, on July 26. Users will gain a direct link to

#### IBM's net points:

- Two faster models of the 3745 Communications Controller to ship in October 1991.
- 3745 host-to-host frame-relay interface within two years.
- Ethernet adapter card to the 3745 in third-quarter 1992.
- Support of encapsulated TCP/IP routing through the 3745 within two years.
- Release of NET's IDNX T1 multiplexer with multiprotocol routing and frame-relay interface — December 1991.
- Ship date for IBM-developed stand-alone multiprotocol router to be announced by year's end.
- AIX, Spacetrans Netview Service Points to ship in July.
- Field test for fused multivendor Netcenter and SNA-only Graphics Monitor Facility to commence early in 1992.

IBM's Netview enterprise network management system and functionality that mirrors that of Netview/PC. Previously, the Unix workstations had to communicate with Netview/PC, which required managing IBM network devices.

"This move broadens network management access, but it doesn't really address distributed network management," Leary said. "You can probably count the people who have been satisfied with Netview/PC on one hand."

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# Intel claims 50% performance gain for new chip

BY JIM NASH  
and MICHAEL FITZGERALD  
CNET NEWS SERVICE

SANTA CLARA, Calif. — IBM and Compaq Computer Corp. will lead the pack of vendors out the door this week with desktop personal computers based on the Intel Corp. 50-MHz 486DX microprocessor.

Limited amounts of the chip-cache model will be available next month, according to Intel. Volume shipments are expected in the fourth quarter.

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Compaq's Deskre 486/50L will range from a suggested retail price of \$1,129.99 for a model with a 120-Mbyte hard disk to \$1,999 for one with a 510-Mbyte hard disk.

Lynn Schleimeyer, Compaq's director of new product marketing, said the firm expects the 486/50L to be "a major contributor to revenues" in 1991, despite a third-quarter ship date.

Unlike a number of high-end Intel-based desktop PCs announced recently, the 486/50L won't be upgradable, Schleimeyer said. Compaq's design goals — to "get the highest level of performance from the machine" — required Compaq to tailor the system exclusively to the 50-MHz Intel chip.

#### DX clones

IBM, Dell Computer Corp. and NCR Corp. have demonstrated machines running the DK, although none has announced dates for shipping new machines or upgrade boards for existing computers.

IBM is expected to announce Personal System/2 Models 90 and 95 using the 50-MHz chip, as well as upgrade cards to allow users of earlier versions of the 90 and 95 that used the 20-MHz 486SX or the 25-MHz or 33-MHz 1486.

IBM's PS/2 486/50 process-

sor upgrade option will cost \$3,695 for users of 33-MHz systems and up to \$7,245 for users of 486SX systems.

Dell began marketing a PC using the new chip in Europe, according to Charlie Sauer, vice president of Dell's advanced systems development. A U.S. version will follow soon, he said.

A Netware Systems, Inc. spokesman said his firm has reviewed the DX chip and intends to use it in one of its multiple independent desktop computers.

Dana Kelle, marketing manager for Intel's 386 architecture, said the new chip is designed for mainframes, entry-level PC servers and high-end desktops.

Kelle said that combining the chip with the memory cache on a board should save computer makers time that would be spent designing their own cache interfaces. He also said placing caches closer to the microprocessor quickens CPU operations by reducing the distance and hardware that instructions must pass through.

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A computer simulation of a hypersonic vehicle traveling at Mach 12.4, showing pressure on its surface and on a cross-section of the shock wave. Magenta is the highest pressure, blue the lowest.



## Fifteen minutes of bliss

"Everything you always wanted to know about ISDN but were afraid to ask will be answered in Bellcore's newest [15-minute] videotape on the subject."

- from a Bellcore Press release



**IN 1981**, MIT systems programmer Jack Gilmore (standing) trained for Thompson, 18, to be one of the first two computer operators. The computer was the Whirlwind. Thompson, now 58, is a senior analyst at Unisys Corp. The Whirlwind is on display during The Computer Museum's "People and Computers: Milestones of a Revolution" exhibit opening June 29 in Boston.

## And it's easy on the feet

Who would trudge through the endless, crowded aisles of a high-technology trade show if you could view the bustling event from the comfort of your desktop computer? The Association of Computer Machinery is offering a digital invitation to its 18th annual Siggraph '91 graphics conference, which meets July 28 through Aug. 2 in Las Vegas. The interactive invite (available for both the Apple Macintosh and IBM PCs) features graphics and information, including a list of exhibitors and seminar programs at the show. A copy of the disk can be obtained from Siggraph '91 Conference Management (312) 644-6610.

## Dumpin' on DOS

"I don't consider DOS an operating system. It's a bad collection of device drivers and I/O drivers." - Michael Purcell, software consultant, Buster Healthcare Corp., during a panel discussion on different platforms for client/server computing.

## OFFICE

A survey of 1,476 professionals men and women found the following are unacceptable practices in the workplace:

1. Kissing (84% rate it unacceptable)
2. Ethnic jokes (84%)
3. Sexual jokes (83%)
4. Swearing (69%)
5. Short skirts (64%)
6. Wearing sandals (61%)
7. Smoking (61%)

### What's acceptable?

1. Family pictures (90%)
2. Perfume (90%)
3. Long hair in men (70%)
4. Hugging (69%)
5. Touching (58%)

► Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Jodie Nale, of (800) 343-6474. If we use your ideas, we'll send you a gift.

Sources: "Working Smart," a management newsletter published by the National Institute of Business Management, New York; The 1990 Computer Industry Almanac; special thanks to The Computer Museum, Boston.

## INSIDE LINES

### Writing was on the wall

► The quiet departure of Cal Bauer, Microsoft's chief evangelist for its new Trueimage page description language, had many in the industry buzzing about the future of the language. Code has been shipping since last October, but its arrival has been controversial in an industry that has come to regard Adobe's Postscript as the standard. The Bill Gates memo released last week declared: "Offering a cheap Postscript turned out to not only be very hard but completely irrelevant to helping our other technologies." On the other hand, Gates said, the TrueType font format has proved to be an excellent decision.

### Industrial relations

► Current Adaptec President Judy Hamilton has left her job as a partner at Ernst & Young to become senior vice president at Lucas Computing Corp., a vendor of Unix-based software in Los Angeles. So what about husband Stephen McClellan, computer services industry analyst at Merrill Lynch in New York? He's moving as well — to the Merrill Lynch office in Santa Monica, Calif. Same job, better weather.

### Cold War heating up

► Since the introduction of the Advanced Computing Environment (ACE) consortium, the reduced in-

struction set computing (RISC) architecture market is looking like the Cold War. RISC architecture vendors have pumped up the stakes and are stockpiling weapons in the RISC Superpower game. At least one RISC vendor now on San Microsystems' Scalable Processor Architecture will defect to ACE this week, according to Summit Strategies analyst Tom Kurcharcyk.

### Water evaporates under the Sun

► San Microsystems' co-founder and former president, Vinod Khosla, has been cited as the largest water waster in the drought-stricken Silicon Valley town of Palo Alto, Calif. According to public records, Khosla's home used more than 4 million gallons of water in the past 12 months — enough to give every resident in California, New York and Texas a glass of water. Khosla, for his part, claims the excess use was due to the construction of his new house, a 13,000-sq-ft mansion.

### Enforcer goes commercial

► Gail Thackeray, a special deputy attorney in Maricopa County in Arizona, has been appointed vice president at Gatekeeper Telecommunications Systems Inc., a start-up in Dallas. Thackeray was one of the law enforcers working on Operation Sundevil, the much-publicized state and federal crackdown on computer crime. Gatekeeper has developed a device that it claims is a foolproof defense against computer hackers. Thackeray said her leaving will have little

impact on the investigation, but one law enforcer, who asked not to be identified, said it is a sure sign the investigation is on the skids.

### Don't repeat this

► Summing up his strategic insight for Microsoft's managers, Bill Gates, in his now-famous memo, offered a simple summary of the company's strategy: "Windows — one evolving architecture, a couple of implementations and an immense number of great applications from Microsoft and others." The reference to a number of implementations, he wrote, "is a somewhat humorous reference to the fact that our NT [New Technology]-based versions and our NNT versions have a different code in a number of areas ... Eventually, we will get back to one implementation, but it will take four years before we use NT for everything." But, he cautioned, "I would not use this simple summary for outside consumption . . ."

... And finally, lost in the stock market distraction over Bill Gates' warnings about challenges facing the firm was recognition that successful companies are tied to their past and risk losing sight of what is important. The bottom line, Gates said, is that if Microsoft's strategy is executed, "The opportunity for us . . . is incredible." We, too, like the incredible tidbits. Call them in to News Editor Pete Bartolik at (800) 343-6474, fax those secret memos to (503) 875-8531 or rettransmit those electronic missings to our Computerworld address 76537,2413.

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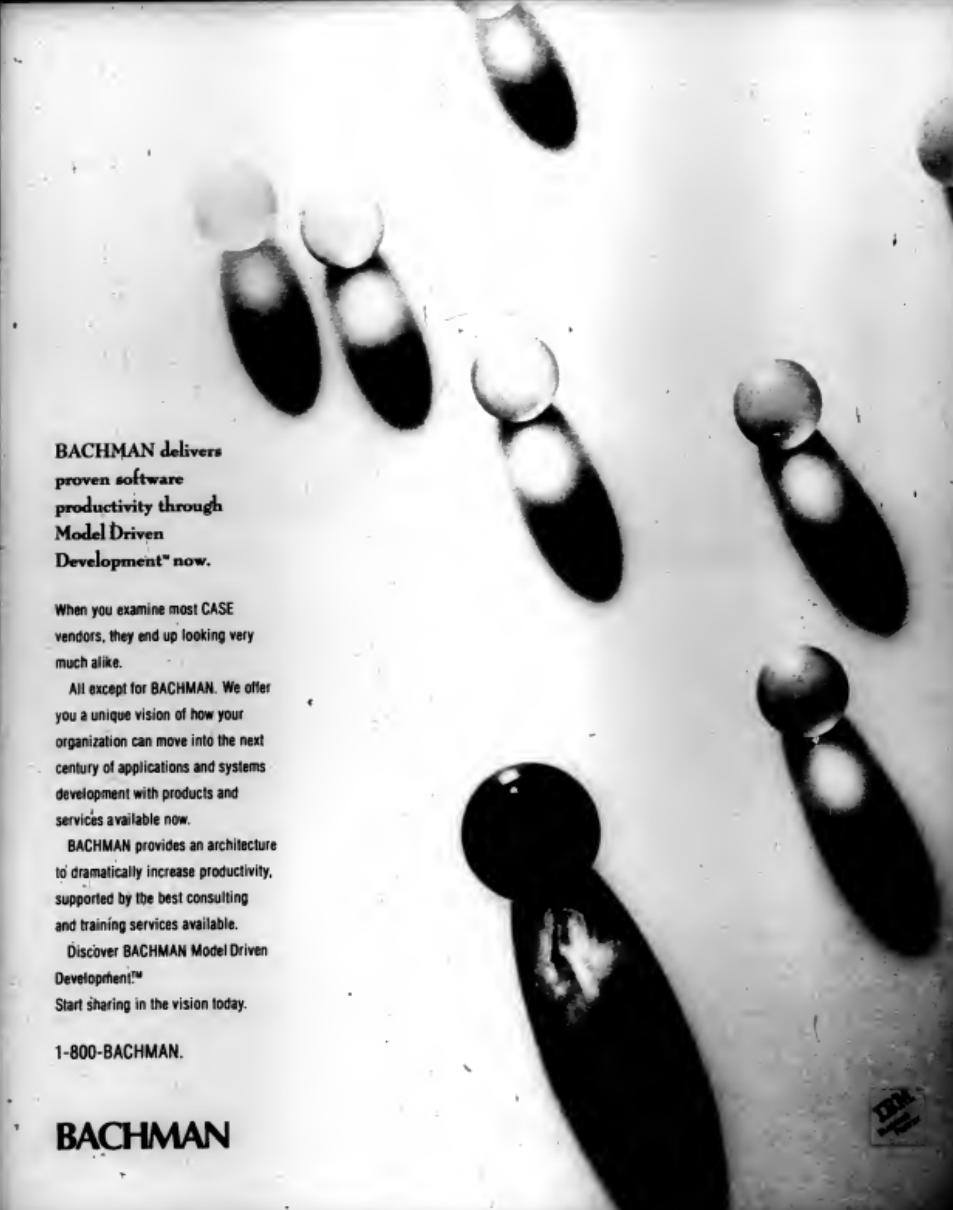
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